Meanings of a Disaster: The Contested 'Truth' about Chernobyl.

British and French Chernobyl Debates and the Transnationality of Arguments and Actors.

KALMBACH, Karena

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of History and Civilization
of the European University Institute

Florence, 26 September 2014 (defence)

European University Institute
Department of History and Civilization

Meanings of a Disaster: The Contested 'Truth' about Chernobyl.

British and French Chernobyl Debates and the Transnationality of Arguments and Actors.

KALMBACH, Karena

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of History and Civilization
of the European University Institute

Examining Board

Prof. Dr. Heinz-Gerhard Haupt (European University Institute)
Prof. Dr. Pavel Kolář (European University Institute)
Prof. Dr. Jens Ivo Engels (Technische Universität Darmstadt)
Dr. Dick van Lente (Erasmus Universiteit Rotterdam)

LANGUAGE CORRECTION

This thesis was submitted for language correction to Margot Wylie. I am thankful for her incredibly thoughtful and highly professional work.

ABSTRACT

This thesis compares the French and British Chernobyl debates in the period between 1986 and 2006 and investigates the transnational debate on the health effects of this accident. While the exchange of actors and arguments has resulted in a rather congruent debate at the transnational level, the internal country debates on Chernobyl have remained very much bound by the national framework. This becomes particularly obvious in the comparison of the French and British Chernobyl debates, where multiple factors, specific to the national context, have shaped the different trajectories of the debates. In France, from the outset, Chernobyl was framed as a French debate, and placed into the context of the *nucléocratie*. In Britain, such an interpretative framework did not exist for the civil nuclear programme, since the predominant criticism against the nuclear enterprise had always been directed against the military complex and more focused on aspects of international relations than on the national nuclear energy complex. In Britain, therefore, Chernobyl was considered from a global perspective, whereas in France the focus was placed on the accident's impact at home. However, with the end of the Cold War and the British government's decision in the mid-1990s to no longer finance new nuclear power plants, anti-nuclear positions as such lost their impetus. Thus, few people in Britain were interested transforming the debate on the health impact of Chernobyl into a proxy war in the fight over the legitimacy of the civil nuclear enterprise, as was happening in France. Leaving this discursive and commemorative gap to the solidarity movement, in Britain, Chernobyl did not become an anti-nuclear *lieu de mémoire* as it did in France, but instead became associated primarily with charity activities for disabled or unprivileged children from Eastern Europe which effectively 'depoliticized' Chernobyl and separated it from the nuclear debate.

TABLE OF CONTENTS

ACKNOWLEDGEMENT

In Dank an Heinz-Gerhard Haupt für seine so wertvolle Unterstützung in den vergangenen vier Jahren.

I INTRODUCTION

After the 1986 nuclear disaster in Chernobyl, the name itself was commonly used to mean 'the worst accident ever to have occurred in the civil use of nuclear energy.' Chernobyl has held this rank ever since, that is, until 11 March 2011, when an earthquake and the resulting tsunami partially destroyed the Japanese nuclear power plant at Fukushima. Classified a category 7 on the *International Nuclear and Radiological Event Scale* (INES), the meltdown of the core at Chernobyl was, at the same time, considered the worst accident that could possibly take place in a nuclear power plant. Technically, the actual meltdown is over. In this regard, Chernobyl is considered an event of the past, an event to which a 'start' and an 'end' were attributed by technical evaluations that followed the evolution of the incident. However, its consequences are far from over. As with war, the scars of a nuclear catastrophe run deep; the aftermath is engraved in the environment, in the people's bodies and in their memories. Signing a peace treaty does not bring an end to suffering; burying a destroyed reactor core under hundreds of thousands of tons of concrete does not mean that the evacuees can come home and simply forget what happened.

Comparing the Chernobyl disaster to a war scene is not just an outgrowth of a creative thinking process that was too strongly conditioned by my research on this topic. Many Ukrainian and Belorussian accounts narrate and interpret the struggle endured and carried out by the firefighters and rescue workers as a battle against an enemy: the burning reactor. The victims, destruction, and displacements this burning reactor provoked have been paralleled to those caused by World War II. The asymmetry of such an equation may seem obvious when remembering the millions killed in the battlefields and murdered in the concentration camps of World War II, and such a comparison might even seem inappropriate. But these narrations of Chernobyl do indeed exist, as does the metaphor of the 'nuclear holocaust'. The description also exists, however, of Chernobyl as a moderately serious industrial accident that resulted in a handful of deaths and increased the probability that lethal cancers would break out in the exposed population, in other words a minor health impact when compared to the annual number of deaths from road accidents or from smoking cigarettes.

Hence, what does this term 'worst accident ever to have occurred in the civil use of nuclear energy' actually mean? For some, Chernobyl is proof that this technology must be abandoned, better sooner rather than later. Yet, for others, Chernobyl is proof that this technology is the best mankind has invented to date. How is it possible that the same event can be interpreted in such different ways? It is precisely this question that I am concerned with in this book. One could argue: 'What is surprising about the fact that a person in Belarus, who lost not only a loved one but also his or her

home and whose place of birth was deleted from the map, puts the event in a different light than a technocratic engineer in Vienna whose task is to calculate the probability that exactly the same accident will happen in a different nuclear power plant?' Actually, there is nothing at all surprising about the fact that these two people give a different meaning to 'Chernobyl'. Indeed, such an observation would barely be enough to build a whole argument for a PhD thesis upon. But what if these divergent interpretations are found in societies that are considered to be detached from the event, geographically as well as politically? What if even amongst different groups within these societies completely different narratives and interpretations of the causes and consequences of the accident are found? Would this constitute valid grounds for investigating the origin of these different narratives and interpretations, and for looking for explanations that can shed light on why these different narratives and interpretations are constructed the way they are? I do. Therefore, it is the aim of this book to elucidate the processes that led to the formation of these competing 'truths' regarding Chernobyl that are circulating in the public discourse.

As the previous paragraphs have hinted, my approach to such concepts as 'constructions', 'interpretations', and 'narratives' is discourse analytical. It is not my aim to add 'my own truth' to the many that circulate about Chernobyl. What is more, I am not in a position to judge which 'truth' is more valid than another. Undoubtedly, many criteria could be applied to justify such a judgement: for instance, the scientific or political authority of the person or institution to deliver a given statement, or the number of people or institutions that quote this statement. But to judge these competing 'truths' in such a manner would be to hover along the surface of this discourse rather than investigating the discourse as such. Therefore, I am not asking: 'Is this statement valid?' But rather, I am asking: 'Why was a certain narrative disseminated in a precise moment by a given person or institution and what is the meaning or significance of this narrative?'

In the following paragraphs, I will further elaborate what this approach actually means for the way I conducted my research, what I consider to be my frame of reference, and the contribution of my research.

1.1 Why a comparison between France and Britain?

Accounts of Chernobyl are so numerous that it would be nearly impossible to write a global *Diskursgeschichte* ('discourse history') of the accident. Most of the time, the quantity of sources available in any single European country produces enough viable material to generate several years worth of research. When I started my PhD project, I envisaged a three-country comparison between

France, Great Britain, and Italy. For my master's thesis, I had already worked intensively on the French debate regarding the impact of Chernobyl, so for this case study, my foundation was quite solid.[1] My intention was to take this case study as a point of departure and to compare the French debate with those of the other two countries. Shortly after I began work on the British material, however, I was forced to acknowledge that I would not be able to treat the three countries in the same depth. The material I had researched during my first trip to London in 2011 already unveiled a wealth of interesting aspects, although at this point, I could only observe but not yet explain many of them. At the same time, my observations on the British Chernobyl debate called into question some of my hypotheses on the French debate that I had thus far to some degree taken for granted. Therefore, I decided to focus my research on the comparison between France and Britain and, in addition, to look for transnational links in the respective Chernobyl debates. I considered it far more important to research the British debate in depth, to rethink the assumptions I had made regarding the French debate, and to enquire about transnational arguments and actors than to add another case study to my work.

Initially, in choosing France, Great Britain, and Italy for my research project I had focused primarily on two aspects: the impact the Chernobyl disaster had had on the nuclear politics of each country and the growing entanglement of the French nuclear sector with the British and Italian energy sectors from the year 2000 onwards. My research on the British case, however, strengthened one aspect that I had not previously believed to be of importance: that the country in itself was a nuclear power. Once I directed my attention toward this distinguishing characteristic, I began to discover ever more parallels to the French debate – and this despite the fact that the debates had been processed in entirely different ways. By studying these parallels more carefully, my work brought me ever closer to the sphere of Science, Technology and Society (STS) Studies, a field of research I had, heretofore, barely touched upon. But before I proceed to describe the methodological details further (see section 1.3), I would like to briefly discuss the aforementioned parallels between the French and the British case – parallels that render a comparison of their respective Chernobyl debates especially sapid.[2]

---

[1] My master's thesis, which serves here as the basis for my arguments on the French case, was published in 2011: Karena Kalmbach, *Tschernobyl und Frankreich. Die Debatte um die Auswirkungen des Reaktorunfalls im Kontext der französischen Atompolitik und Elitenkultur* (Frankfurt a. M.: Peter Lang Verlag, Zivilisationen und Geschichte 7, 2011.)

[2] When I presented my research at various colloquia and conferences, I was frequently asked why I had not chosen to carry out a French-German comparison. Certainly, such a perspective can be solidly justified given that the French and German Chernobyl debates are so closely interwoven. Indeed, the protective measures put in place in West Germany during the days immediately following the accident had served as an argument in order to call into question the absence of such measures in France and thus sparked the *affaire Tchernobyl*. At the same time, nuclear advocates in France referred to these German counter-measures as proof of the devastating output of an exaggerated *Atomangst*. Therefore, it makes good sense indeed to carry out a French-German comparison to research Western European Chernobyl debates – or to research Western European anti-nuclear protest as Dorothy Nelkin and Michael

France and Great Britain share a common history that since the 20th century has been marked in many ways by the fact that they are the only nuclear powers in Western Europe. This factor – which is attributed the role of the *tertium comparationis* in this comparison – not only shaped each countries' history of technology of the military use of the atom. The decision to build nuclear weapons, at the same time, strongly shaped developments in civil nuclear engineering of the two nations. As the offspring of its military application, the civil use of nuclear energy was similarly governed by classified policies and surrounded in secrecy. Furthermore, nuclear power plants were never simply power plants, in France or in Britain. The inauguration of the first plants went hand in hand with intensive demonstrations of national pride; pride that they had been able to master this technology, that these genius engineers were citizens of the nation. This shared status as nuclear powers was not only reflected in the specific role that was attributed early on to the civil use of nuclear energy, it meant at the same time that they were confronted with criticism from parts of their respective societies that had called this technology into question. Although the focus of this criticism differed between the two countries – in France it was directed toward the civil use of nuclear energy, and in Britain toward the military use – important environmental and anti-nuclear movements sprang up in both and contributed to shaping the respective national discourse on nuclear technology. In both countries, public and political support of the civil use of nuclear energy has oscillated over time. The respective developments of each country did not begin at the same time or progress at the same rates, nor were they identical in how they evolved, but over the last few years, strong political support for a *nuclear renaissance* has been verified in both countries.

With so many similarities between them, one might expect that the direct reactions to the disaster in 1986 and ensuing debates on its impact would also be similar. Yet, this is only true for one of the two aspects. The direct reactions in 1986, particularly from official sources like members of the government or radiation protection agencies, were similar. However, the debates regarding the impact of Chernobyl that would unfold in the years to come could hardly have proceeded more differently. Having been hit by comparable levels of radioactive fallout,[3] the citizens of both

Pollak have to a great extent already done. However, comparative European history has at times been far too limited to the French-German perspective. In addition, intensive research on the German Chernobyl debate has already been undertaken. Moreover, I think it is problematic to permanently and continuously place French and German positions on the nuclear question in opposition to each other. In France, German anti-nuclear convictions are often perceived as a kind of messianic mission, as an open confrontation and criticism of French policies. At the same time, Germans tend to consider themselves to be in a better moral position when it comes to nuclear questions, particularly since the idea that anti-nuclear activism and environmentalism is a German invention is so widespread. If there is a particular lacuna in nuclear debates, it is the lack of willingness of opposing sides to communicate. My intention with this work is not to contribute to this non-communication or lack thereof. On the contrary, I hope that my will open new opportunities for discussion. Therefore, to leave the 'beaten path' of the French-German comparison has the potential to unveil interesting new insights. For me, comparative history not only means to look for similarities, differences, and connections between cases. It means to try to better understand each single case by looking at a specific aspect through different lenses.

[3] For an early estimate of the levels and intensity of the radioactive fallout in both countries, see for example:

countries were assured that there would be no repercussions on their health. Official statements released at the time went on to specify that the accident had occurred too far away for there to be any effects: even had a minimal quantity of airborne radionuclides reached the country the associated risk levels would be marginal. Furthermore, according to these official statements, the accident did not constitute grounds for calling into question the safety of the national nuclear programme insofar as the accident was a combination of elements: the Soviet (hence inferior) technology, the faulty design of the reactor, and the human errors of the plant workers. These statements, how they were communicated, and how the public and certain groups and individuals reacted towards them, will be analysed in depth in the following chapters. What interests us here is that although France and the UK started from a similar point of departure in 1986, their debates on the impact of Chernobyl developed in very different ways. In France, Chernobyl was assigned the role of a *lieu de mémoire*[4] ('site of memory', i.e. a symbolic element of the memorial heritage of a community) and became a common reference point not only in nuclear energy debates but also in wider arguments on public policy. In Britain, on the other hand, Chernobyl was to all effects almost forgotten.

How is it possible that Chernobyl, between France and Britain, was allocated to two diametrically opposed positions in the collective memory? What were the influencing factors that enabled the memory of Chernobyl to be 'kept alive' in France, and which factors in Britain buried

National Radiological Protection Board, *A Preliminary Assessment of the Radiological Impact of the Chernobyl Reactor Accident on the Population of the European Community* (Luxembourg: Commission of the European Communities, 1987): Appendix, Figure 7 Average Adult Effective Dose to 50 y within the EC. In this map, French and British citizens are indicated to have received a similar effective dose: 10-50 μSv in the greater part of the country and 80-300 μSv in the more affected regions, more specifically in the south-east (France) and the north-west (Britain). Initial maps like this were the product of the extrapolation of individual measuring points (N.B. the number of measuring points varied widely from one country to another). These estimates were revised and refined in the years immediately following 1986. Later maps were the result of a compendium of different kinds of data derived for example from measurements of radionuclides in soil and grass samples, or in the rainfall or sometimes even nationwide comprehensive measurements of caesium. The most complete atlas of the whole of Europe was published by the European Commission in 1996. A free downloadable version is available: *Atlas on the caesium deposition across Europe after the Chernobyl accident* (Luxembourg: Office for Official Publications of the European Communities, 1998), http://rem.jrc.ec.europa.eu/RemWeb/pastprojects/atlasfiles/TEXT/ENGLISH.PDF (last accessed: 15 June 2013).

[4] Since Pierre Nora's classic work on the sites of memory of France, his concept has on various occasions been removed from its original conceptual frame of nation building and applied to the most different contextual settings in which a collective memory contributes to the self-conception of a specific group. In this book, I also refer to the broader meaning of the term when I speak of Chernobyl as a *lieu de mémoire*. Thus, I am not implying that Chernobyl holds a certain place in the self-conception of a nation (although this might indeed be the case, for example, in Belarus) but rather I mean that the memory of the event contributes to the identity of a group of people. Recently, the concept of *lieu de mémoire* was adopted by environmental historians and resulted in the creation of the anthology *Ökologische Erinnerungsorte* ('ecological sites of memory') and led to the publication of a special edition of the journal *Global Environment*. For the conceptual framework, see: Frank Uekötter, "Wege zu einer ökologischen Erinnerungskultur." In *Ökologische Erinnerungsorte*, ed. by Frank Uekötter (Göttingen: Vandenhoeck & Ruprecht, 2014): 7-26; id., "Environment and Memory: Some Introductory Remarks," *Global Environment* 11 (2013): 5-15. It is interesting to note that there is no article on Chernobyl included in the comprehensive book project *Europäische Erinnerungsorte* ('European sites of memory'), which was published in 3 separate volumes in 2011-12 by the *Oldenbourg Verlag*.

the memory of Chernobyl? Who were the stakeholders in this process? And what are the overarching frames of these developments, which are so essential to our understanding of the respective symbolic meaning of the two national Chernobyl debates? These questions stand at the core of this book and the attempt to answer them was the aim of my research. I am afraid, however, that not all of these questions will be answered to the fullest satisfaction of the readers. At times, in the course of this book, I will have to raise even more questions rather than give answers. But as this work was an endeavour into generally un-researched terrain, I am sure that raising new questions will also contribute to a better understanding of the contested 'truths' that surround Chernobyl.

Until recently, the influence the collective memory of Chernobyl had on Western European societies and the construction of this historical event was practically overlooked. Historians had limited themselves to the idea that a history of Chernobyl existed only in those countries that were the most (directly) affected by the radioactive fallout, i.e. Belarus, Ukraine, and the Russian Federation. Some attention was turned toward West Germany, where the timing of the accident occurred at the peak of the anti-nuclear movement and therefore news of the former was very strongly received. However, even if the governments and radiation protection agencies of several countries were quick to state that their countries had not been touched by any considerable radioactive fallout – whether this is indeed true or not is a question that does not concern us here – Western European countries experienced an intense debate over the impact Chernobyl would have. Chernobyl has thus become a global historical event and its discursive impact cannot be locally equated with just its physical impact.

Due to the novelty of my topic, I could not base my work on solid pre-existing research of Western European Chernobyl debates. Instead, I had to draw on the literature and knowledge from many different fields. In the following section, I will give a brief summary of what areas of research were important for my own work, and at the same time offer the reader insight into the miscellaneousness of the different approaches to Chernobyl.

1.2 The state of the art in Chernobyl research and connected works

The Chernobyl accident has only recently become a topic of historical research. Unlike political scientists and sociologists, who have investigated this field from the outset (i.e. directly from 1986 on), historians are at the cusp of the discovery that they, too, can contribute to this field of research. Their role will not be limited to an order to 'find out what really happened on 26 April 1986', once

the archives are opened. What historians can primarily contribute to the research on Chernobyl now is their critical approach to sources, i.e. by asking how a certain narrative developed and not just taking it for granted, or by investigating the impact this narrative had on the collective memory of a society, and not by simply analysing the outcome in terms of 'learning abilities' and 'risk awareness' (two fields many social science Chernobyl-studies have focused on). 'Historicizing Chernobyl' does not mean that this event must be banished to the past, denying that its fallout continues to have an impact even today and might continue to do so even for a long time yet to come. 'Historicizing Chernobyl' means, rather – and here I follow the approach of the *Begriffsgeschichte* ('history of concepts') – that Chernobyl is not a fixed entity, a clearly contoured 'thing' that has an absolute meaning. On the contrary, I treat Chernobyl as something the meaning of which changes and mutates over time, and I am interested in why these changes occur, in which context they occur, and who are the promoters behind them.

The following paragraphs give an overview of the disciplines and sub-disciplines that have addressed the question of Chernobyl. At the same time, this account on the state of the art of research also informs the reader of the publications and authors that lie outside the truly interdisciplinary field of Chernobyl research that have been important for my own project.

1.2.1 History and Anthropology of Eastern Europe

Within social sciences and the humanities, the field of history and anthropology of Eastern Europe is surely the one that has addressed Chernobyl more than any other. Historians and anthropologists are not the only ones who have conducted research in this field. Political scientists and sociologists have as well. What they all have in common is a shared interest in the way in which Chernobyl transformed and impacted the societies geographically closest to the plant: the peoples of Ukraine, Belarus and the Russian Federation. From this field of research, it is certainly Adriana Petryna's work that, internationally, has received the most attention. Her book, *Life Exposed: Biological Citizenship after Chernobyl*,[5] in which she sheds light on the societal impact of the compensation system that was implemented for the parts of the Ukrainian population that were exposed, has clearly obtained the status of a reference work for Chernobyl research. Recently, a research group based at the Centre for Contemporary History in Potsdam (ZZF), headed by Melanie Arndt and funded by the *Volkswagen Stiftung* has made important contributions to this field. Six scholars conducted research on *Politics and Society after Chernobyl* in Belarus, Ukraine, Russia, Lithuania

[5] Adriana Petryna, *Life Exposed: Biological Citizens after Chernobyl* (Princeton: Princeton University Press, 2002).

and Germany in individual projects, the focus of which lay on the question: '*how the subject of Chernobyl became a line of conflict and how it was instrumentalized by the dynamics of various movements*'.[6] The anthology *"Anthropologischer Schock" nach Tschernobyl? Politik und Gesellschaft nach der Katastrophe* assembles the papers presented in an international conference organized by this group in 2011.[7]

There are far too many important works in this field of research than is possible to discuss here in detail. Thus, my reference to Petryna's book, the ZZF research group and the conference publication should be considered only as examples of a flourishing scientific field. Moreover, this section is not intended to be a literature review but rather is intended to give an idea of the diversity that exists in the approaches to the Chernobyl topic. Before moving on to another field that is concerned with research on this nuclear accident, the footnote below lists further references of interest.[8]

1.2.2 History of Technology, History of Science, Environmental History

The decision to combine the historical sub-disciplines of the History of Technology, the History of Science, and Environmental History into one single paragraph requires some explanation. Although at times, there is an overlap in the topics they study, these sub-disciplines most certainly do not constitute a coherent field of study and frequently do not even share the same methodological approaches. Moreover, with regard to their relevance for research on Chernobyl, very few scholarly works from these disciplines explicitly investigate this particular accident. There is, however, a

---

6 This is a quote from the project's website www.after-chernobyl.de (last accessed: 15 June 2013). The entire research project consisted of Melanie Arndt's Post-Doc-project and five doctoral dissertations by Evgenija Ivanova, Tatjana Kasperski, Anastasija Leuchina, Andrej Stepanov, and Aleksandr Dalhouski respectively. For a description of the individual projects, see: http://www.zzf-pdm.de/site/661/default.aspx (last accessed: 15 June 2013).

7 Melanie Arndt (ed.), *"Anthropologischer Schock" nach Tschernobyl? Politik und Gesellschaft nach der Katastrophe* (Wien / Köln / Weimar: Böhlau, 2014, forthcoming).

8 For publications from the field of history and anthropology of Eastern Europe concerned with Chernobyl, see for example: Melanie Arndt (ed.), "Memories, Commemorations, and Representations of Chernobyl" in *Anthropology of East Europe Review,* 30, 1 (2012); Olga Kuchinskaya, "Twice Invisible: Formal Representations of Radiation Danger," in *Social Studies of Science* 43, 1 (2012): 78-96; Tatiana Kasperski, *La politique de la mémoire d'une catastrophe nucléaire: les usages de l'accident de Tchernobyl en Biélorussie (1986–2008)* (Sciences Po Paris: PhD dissertation, 2012); Sarah Drue Phillips, "Chernobyl's Sixth Sense: The Symbolism of an Ever-Present Awareness," in *Anthropology and Humanism*, 29, 2 (2004): 159–85; Astrid Sahm, *Transformation im Schatten von Tschernobyl. Umwelt- und Energiepolitik im gesellschaftlichen Wandel von Belarus und Ukraine* (Münster: LIT Verlag, 1999); id., "Und der dritte Weltkrieg heißt Tschernobyl..." In *Erinnerungen gegen den Krieg*, ed. by F. Dorn et al. (Minsk: Journalistenfonds des Journalistenverbandes von Belarus, 1995): 202-227; Melanie Arndt, "Von der Todeszone zum Strahlen-Mekka? Die Erinnerung an die Katastrophe von Tschernobyl in Belarus, der Ukraine und Russland," in *Zeitgeschichte-online*, April 2006; Astrid Sahm, Manfred Sapper, Volker Weichsel (eds), "Tschernobyl: Vermächtnis und Verpflichtung," special issue of *Osteuropa*, 56, 4 (2006); David Marples, *Chernobyl and Nuclear Power in the USSR* (Basingstoke: Macmillan, 1987); id., *The Social Impact of the Chernobyl Disaster* (Basingstoke: Macmillan, 1988).

broad literature from these three historical sub-disciplines that is concerned with various aspects of nuclear technology. One might go so far as to say that 'Nuclear History' as it is represented today in conferences, book projects, and research groups is mainly grounded in that point in which theses three historical sub-disciplines intersect: Research on the development of nuclear technology in a particular country,[9] on regulatory regimes,[10] on specific projects,[11] or on particular scientists[12] encounters, here, publications on particular accidents,[13] as well as studies concerned with the societal and environmental impact of this technical enterprise.[14] This variety of scholarly approaches and scientific backgrounds is clearly reflected in the different departmental affiliations of the members of the *Nuclear International Research Group* (NIRG).

This heterogeneous body of scholarly work on Nuclear History widened my perspective and led me to reflect upon Chernobyl not as single isolated event but as part of a bigger picture of nuclear techno-politics and their environmental impact. For my case studies on France and Britain, the works by Gabrielle Hecht[15] and Brian Wynne[16] were of utmost importance. Their works are telling examples of the way in which disciplinary boundaries blur when it comes to Nuclear History: Hecht's work on the post-war French nuclear programme and Wynne's work on the conflicts implicit in the British post-Chernobyl sheep farm restriction are classics in STS and, at the same time, serve as primary references for research in the nuclear history of both countries.

---

9 For classical works on the history of specific national nuclear programmes, see for example: Joachim Radkau, *Aufstieg und Krise der deutschen Atomwirtschaft 1945-1975. Verdrängte Alternativen und der Ursprung der nuklearen Kontroverse* (Reinbek: Rowohlt 1983); Margaret Gowing, assisted by Lorna Arnold, *Independence and Deterrence: Britain and Atomic Energy, 1945–1952* (London: Macmillan, 1974); Robert Anderson, *Nucleus and Nation: Scientists, International Networks, and Power in India* (Chicago IL: University of Chicago Press, 2010); Paul R. Josephson, *Red Atom. Russia's Nuclear Power Program from Stalin to Today* (Pittsburgh: University of Pittsburgh Press, 2005).

10 See for example: Cyrille Foasso, *L'Histoire de la sûreté de l'énergie nucléaire civile en France, 1945- 2000* (Université Lumière Lyon II: dissertation, 2003); Soraya Boudia, "Global regulation: Controlling and Accepting Radioactivity Risks," in *History and Technology* 23, 4 (2007): 389-406.

11 See for example: Susan M. Lindee, *Suffering Made Real: American Science and the Survivors at Hiroshima* (Chicago IL: University of Chicago Press, 1994).

12 See for example: Cathryn Carson, *Heisenberg in the Atomic Age. Science in the Public Sphere* (Cambridge: Cambridge University Press, 2010); Andrew Brown, *Keeper of the Nuclear Conscience. The Life and Work of Joseph Rotblat* (Oxford: Oxford University Press, 2012); Christoph Laucht, *Elemental Germans: Klaus Fuchs, Rudolf Peierls and the Making of British Nuclear Culture 1939-59* (Basingstoke: Palgrave Macmillan, 2012).

13 See for example: Samuel Walker, *Three Mile Island. A Nuclear Crisis in Historical Perspective* (Berkeley: University of California Press, 2004); Lorna Arnold, *Windscale 1957: Anatomy of a Nuclear Accident* (Basingstoke: Palgrave Macmillan, 1995).

14 See for example: Kate Brown, *Plutopia. Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (Oxford: Oxford University Press, 2013); Jacob Darwin Hamblin, *Poison in the Well. Radioactive Waste in the Oceans at the Dawn of the Nuclear Age* (New Brunswick, NJ: Rutgers University Press, 2008); Laura Harkewicz, *The Ghost of the Bomb: The Bravo Medical Program, Scientific Uncertainty, and the Legacy of U.S. Cold War Science, 1954—2005* (PhD Dissertation University of California San Diego, 2010).

15 Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 1998); id., "Nuclear Ontologies," in *Constellations,* 13, 3 (2006): 320–331.

16 Brian Wynne, "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science," in *Public Understanding of Science* 1 (1992): 281-304; id., "Sheepfarming after Chernobyl. A Case Study in Communicating Scientific Information," in *Environment* 31, 2 (1989): 10-39; id., *Rationality and Ritual. Participation and Exclusion in Nuclear Decision-making* (Abingdon: Earthscan, 2011).

1.2.3 Social and Cultural History of the Nuclear Age

A classic example of approaching the nuclear complex from a social and cultural history perspective is the book *Nuclear Fear* by Spencer Weart. In this book, Weart traces the origins of the pervasive nuclear imagery that continues to accompany our conceptualization of nuclear power today.[17] A broad range of scholarly publications shed light on the cultural implications of this new technology, particularly with regard to the atomic bomb and its crucial role in Cold War deterrence strategies.[18] The notion of 'cultural implications' has two meanings in this regard: the first studies the implications that the nuclear complex had on specific cultural media such as film or newspapers.[19] The second incorporates the endeavours that were undertaken to merge individual case studies with the aim of outlining the specificities of a particular national nuclear culture, as was recently carried out for the case of Britain.[20]

However, research in the field of Social and Cultural History of the Nuclear Age is not interested exclusively in the cultural 'output' of nuclear discourses. At the same time, it considers the 'input' side of the process and investigates the role of scientists and techno-political regimes in the construction of these nuclear discourses. Gabrielle Hecht's work on the French post-war nuclear enterprise is a classic example of this approach.[21] In this regard, certain nuclear scientific communities, networks, or individual scientists have come to be a well-researched topic.[22]

Undoubtedly, one central aspect of nuclear history that social historians in particular have been concerned with is the field of anti-nuclear movements. These movements are mostly considered in connection to the history of the environmental movement or the peace movement in a

---

17 Spencer R. Weart, *Nuclear Fear. A History of Images* (Cambridge, MA: Harvard University Press, 1988).

18 For another classical study in this regard, see: Paul S. Boyer, *By the Bombs Early Light. American Thought and Culture at the Dawn of the Atomic Age* (New York: Pantheon, 1985). Reflections on the nuclear legacy of the Cold War can be found in: Bernd Greiner (ed), *Erbe des Kalten Krieges* (Hamburg: Hamburger Edition, 2013). The majority of the literature dealing with the nuclear complex in relation to the Cold War comes from the field of International History. For such works, see for example: Beatrice Heuser, *Nuclear Mentalities? Strategies and Belief-systems in Britain, France and the FRG* (Basingstoke: Palgrave Macmillan, 1998); Leopoldo Nuti, *La sfida nucleare. La politica estera italiana e le armi atomiche, 1945-1991* (Bologna: Il Mulino, 2007); David Holloway, *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939-1956* (New Haven: Yale University Press, 1994).

19 For the latest publication in this field, see: Dick van Lente (ed.), *The Nuclear Age in Popular Media. A Transnational History, 1945-1965* (Basingstoke: Palgrave Macmillan, 2012).

20 Jonathan Hogg and Christoph Laucht (ed.), "British Nuclear Culture," *The British Journal for the History of Science,* 45, 4 (2012). For France, a similar sort of endeavour was undertaken. However, it did not only address the nuclear culture but the ecological culture of the entire nation. See: Michael Bess, *The Light-Green Society. Ecology and Technological Modernity in France, 1960-2000* (Chicago IL: University of Chicago Press, 2003); id., "Ecology and Artifice: Shifting Perceptions of Nature and High Technology in Postwar France," in *Technology and Culture* 36, 4 (1995): 830-862.

21 Hecht, *The Radiance of France*.

22 I previously referred to this body of research in relation to the History of Science, see footnote 12.

specific country or region, or to a particular protest event.[23] The transnational and European perspectives have also gained importance in recent years.[24] With regard to Britain, the works of Karl Ditt[25] on nature protection and of Holger Nehring[26] on the anti-nuclear weapons movement are of central importance for gaining an understanding of the historical discursive context within which debates on the civil use of nuclear energy have been located. At the same time, Sezin Topçu's investigation into the history of the contestation of nuclear energy in France is crucial for understanding the French discursive context.[27]

Anti-nuclear movements are not a topic of interest only for historians, however. Rather, it is a field that has long been dominated by political scientists and sociologists. The same is true for research on power dynamics – such as decision making processes or elite formation – within the nuclear complex.

1.2.4 Sociology and Political Science: Anti-nuclear movements, nuclear politics, STS, and risk

As mentioned in the previous paragraph describing the historical perspective on anti-nuclear movements, these last have also been studied from the sociology and political science perspectives. Studies on the movements in specific countries[28] and the use of comparative approaches have

[23] See for example: Tom Wellock, *Critical Masses: Opposition to Nuclear Power in California, 1958-78* (Madison: University of Wisconsin Press, 1998); Gilles Simon, *Plogoff. L'apprentissage de la mobilisation sociale* (Rennes: Presses Universitaires de Rennes, 2010); Jens Ivo Engels, *Naturpolitik in der Bundesrepublik. Ideenwelt und politische Verhaltensstile in Naturschutz- und Umweltbewegung 1950-1980* (Paderborn: Schöningh, 2006).

[24] For the latest publications in this field, see: Jan-Henrik Meyer, "Challenging the Atomic Community: The European Environmental Bureau and the Europeanization of Anti-Nuclear Protest." In *Societal Actors in European Integration. Polity-Building and Policy-Making 1958–1992*, ed. by W. Kaiser and J.-H. Meyer (Basingstoke: Palgrave, 2013): 197–220; id., "Un faux départ? Les acteurs français dans la politique environnementale européenne des années 1970." In *Une protection de l'environnement à la française, XIXe-XXe siècles*, ed. by J.-F. Mouhot and C.-F. Mathis (Seyssel: éditions Champ Vallon, 2013): 120–30.

[25] Karl Ditt, "Vom Natur- zum Umweltschutz? England 1949 bis 1990." In *Natur und Umweltschutz nach 1945. Konzepte, Konflikte, Kompetenzen*, ed. by F.-J. Brüggemeier and J. I. Engels (Frankfurt am Main: Campus, 2005): 38-61. For his comparative work, see for example: id., "Die Anfänge der Naturschutzgesetzgebung in Deutschland und England 1935/49." In *Naturschutz und Nationalsozialismus*, ed. by J. Radkau and F. Uekötter (Frankfurt am Main: Campus, 2003): 107-144; id., "Naturschutz und Tourismus in England und in der Bundesrepublik Deutschland 1949-1980. Gesetzgebung, Organisation, Probleme," in *Archiv für Sozialgeschichte* 43, (2003): 241-274.

[26] Holger Nehring, "Cold War, Apocalypse, and Peaceful Atoms. Interpretations of Nuclear Energy in British and West German Anti-Nuclear Weapons Movements," in *Historical Social Research* 29, 3 (2004): 150-170.

[27] Sezin Topçu, *L'agir contestataire à l'épreuve de l'atome. Critique et gouvernement de la critique dans l'histoire de l'énergie nucléaire en France, 1968-2008* (École des Hautes Études en Sciences Sociales: PhD dissertation, 2010); recently published as book: Sezin Topçu, *La France nucléaire. L'art de gouverner une technologie contestée* (Paris: Éditions du Seuil, 2013). See also her articles: id., "Les physiciens dans le mouvement antinucléaire: entre science, expertise et politique," in *Cahiers d'histoire. Revue d'histoire critique* 102, 2 (2007): 89-109; id., "Confronting Nuclear Risks: Counter-Expertise as Politics Within the French Nuclear Energy Debate," in *Nature and Culture* 3, 2 (2008): 225-245.

[28] The work of Alain Touraine is of central importance for gaining an understanding of anti-nuclear activism in France: Alain Touraine, *La prophétie anti-nucléaire* (Paris: Éditions du Seuil, 1980); id., "Réactions anti-nucléaires ou

resulted in a broad range of social science literature on this topic.[29] The same is true for studies on nuclear politics, policies and polities. Here as well, a considerable variety of comparative studies and national case studies have been carried out. Furthermore, among the researchers who have conducted research in this area are those who are particularly concerned with the direct impact of Chernobyl on nuclear politics, policies and polities, like Angela Liberatore.[30]

In addition, political scientists often include in their conclusions explicit policy advice based on their research findings.[31] Consequently, their work is generally a good reflection of the current political debates about the future of the civil use of nuclear energy.[32]

Yet, another group of social scientists concerned with nuclear questions are the STS scholars. Their research focuses on the power dynamics within the nuclear complex, among which are the decision-making processes, elite formation, and the production of scientific knowledge. These studies often deal with specific problematic issues, such as accidents or the radioactive contamination of workers, downwinders, and the environment, or radioactive waste.[33] Connecting my work on Chernobyl to the field of STS – especially through the work of Brian Wynne and

---

mouvement anti-nucléaire," in *Sociologie et Société*, 13, 1 (1981): 117-145. A comprehensive study on the anti-nuclear movements of Britain does not exist, although an essential part of this topic is covered in Ian Welsh, *Mobilising Modernity. The nuclear moment* (London: Routledge, 2000). On the other hand, the British environmental movement has been studied in detail, mainly by Christopher Rootes. For a comprehensive summary of his work on England, see his conference paper "*Environmental Protests, Local Campaigns and the Environmental Movement in England*", available online: http://www.kent.ac.uk/sspssr/staff/academic/rootes/ecpr-lisbon.pdf (last accessed: 15 November 2013).

29 See for example: Wolfgang Rüdig, *Anti-nuclear Movements: A World Survey of Opposition to Nuclear Energy* (Harlow: Longman, 1990); Emmanuel Rivat, *La transnationalisation de la cause antinucléaire en Europe. Une approche comparée de la France et des Pays-Bas, 1970-2010* (Sciences Po Bordeaux: PhD dissertation, 2013); Dorothy Nelkin and Michael Pollak, *The Atom Besieged: Antinuclear Movements in France and Germany* (Cambridge, MA: MIT Press, 1982); Tony Chafer, "Politics and the perception of risk: A study of the anti-nuclear movements in Britain and France," in *West European Politics* 8, 1 (1985): 5-23; Christian Joppke**,** *Mobilizing against Nuclear Energy: a Comparison of Germany and the United States* (Berkeley, University of California Press, 1993); Hanspeter Kriesi, Ruud Koopmans, Jan Willem Duyvendak, Marco G. Giugni, *New Social Movements in Western Europe. A Comparative Analysis* (chapter 6: The Political Construction of Nuclear Energy Issues) (Minneapolis: University of Minnesota Press, 1995); Dieter Rucht, "The Impact of Anti-Nuclear Power Movements in International Comparison." In *Resistance to New Technology. Nuclear Power, Information Technology, and Biotechnology*, ed. by Martin Bauer (Cambridge: Cambridge University Press, 1995): 277-289.

30 Angela Liberatore, *The Mangement of Uncertainty. Learning from Chernobyl* (Amsterdam: Gordon and Breach Publishers, 1999).

31 See for example: Lutz Mez, Lars Gerhold, Gerhard de Haan, *Atomkraft als Risiko. Analysen und Konsequenzen nach Tschernobyl* (Frankfurt am Main: Peter Lang Verlag, 2010); or publications by the Sussex Energy Group, such as the working paper by Jim Watson and Alister Scott, "New Nuclear Power in the UK: A Strategy for Energy Security?," available online: http://www.sussex.ac.uk/Users/prpp4/Supergen_Nuclear_and_Security.pdf (last accessed: 15 November 2013).

32 The extensive research undertaken by political scientists on the issue of proliferation is not considered in this account.

33 See for example: Joseph P. Masco, *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton University Press, 2006); Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, MA: MIT Press, 2012); Richard Hindmarsh (ed.), *Nuclear Disaster at Fukushima Daiichi: Social, Political and Environmental Issues* (New York: Routledge, 2013); Sonja Schmid, "When Safe Enough is not Good Enough," in *Bulletin of the Atomic Scientist* 67, 2 (2011): 19-29; Paul Jobin, "Qui est protégé par la radioprotection?," in *Ebisu* 47 (2012): 121-131; Yannick Barthe, *Le pouvoir d'indécision. La mise en politique des déchets nucléaires* (Paris: Economica, 2006).

Gabrielle Hecht on the British and French nuclear complex[34] – was a precious step in the evolution of my research the moment that many issues I had identified as central to the different trajectories of national Chernobyl debates also lie at the heart of many research questions of STS scholars.[35]

However, STS studies of the nuclear complex are not the only STS studies that can improve one's understanding of the issues at stake in the Chernobyl debate. Research on other 'big technologies', too – like electricity networks,[36] bio-(chemical-) and life sciences[37] or GMOs[38] – sheds light on the interface between society and technology and on issues and constellations that often parallel those of the nuclear complex. In addition, the work carried out in STS on social constructions and the role of experts, counter-experts and laypersons has produced results that have been of paramount importance to this study, too.[39]

Amongst sociologists, research on and the theorization of risk has been a major interest for a long time. Considered an incarnation of a risky technology, the nuclear complex has prominently served as an illustrative example of the arguments made by researcher, wherein Ulrich Beck's *Risk Society*[40] and Charles Perrow's *Normal Accidents*,[41] as the most prominent examples, sit at the forefront.[42] Chernobyl has been associated with Beck's work in particular; not only because *Risk*

---

[34] I already referred to the work of these authors in relation to the History of Science and Technology, see footnotes 15 and 16.

[35] Atsushi Akera's summary of traditional STS approaches illustrates well the overlap with the perspective I have taken on the Chernobyl debates: '*Those in STS would focus on expert authority, political protest, public debates, and the projected images surrounding a controversial technology.*' (Atsushi Akera, *Synopsis of the Sessions and Papers on the 2011 Fukushima / East Japan Disaster, 4S/EASST Annual Meeting*, Copenhagen Business School 17-20 October 2012, posted on fukushima-forum@googlegroups.com; last accessed: 15 November 2013).

[36] See for example: Jean-Baptiste Fressoz, "The Gas Lighting Controversy: Technological Risk, Expertise, and Regulation in Nineteenth-Century Paris and London," in *Journal of Urban History* 33, 5 (2007): 729-755.

[37] See for example: Sheila Jasanoff, *Designs on Nature. Science and Democracy in Europe and the United States* (Princeton NJ: Princeton University Press, 2005); Soraya Boudia and Natalie Jas, *Powerless Science? Science and Politics in a Toxic World* (New York: Berghahn Books, 2014).

[38] For a French-British comparison in this field, see: Pierre-Benoit Joly and Claire Marris, "La participation contre la mobilisation? Une analyse comparée du débat sur les OGM en France et au Royaume-Uni," in *Revue internationale de politique comparée* 10, 2 (2003): 195-206.

[39] For research on nuclear expertise in France, see the work of Sezin Topçu (footnote 26) and Soraya Boudia, "Sur les dynamiques de constitution des systèmes d'expertise scientifique: le cas des rayonnements ionisants," in *Genèses* 70, 1 (2008): 26-44. In recent years, experts and elites have become prominent topics not only for sociological but also for historical research. A particularly interesting study among the broad literature available is: Lee Clarke and Caron Chess, "Elites and Panic. More to Fear than Fear Itself," in *Social Forces* 87, 2 (2008): 993-1014. For general considerations on the role of experts in society, see Harry Collins and Robert Evans, *Rethinking Expertise* (Chicago IL: University of Chicago Press, 2007) and the many reactions to this book.

[40] Ulrich Beck, *Risikogesellschaft* (Frankfurt am Main: Suhrkamp, 1986).

[41] Charles Perrow, *Normal Accidents. Living with High-Risk Technologies* (Princeton NJ: Princeton University Press, 1984).

[42] For more important sociological works on risk, see for example: Niklas Luhmann, *Risk: A Sociological Theory* (Berlin / New York: de Gruyter, 1993); Wolfgang Bonß, *Vom Risiko. Ungewißheit und Unsicherheit in der Moderne* (Hamburg: Hamburger Edition, 1995); William R. Freudenberg, "Perceived Risk, Real Risk: Social Science and the Art of Probabilistic Risk Assessment," in *Science* 242 (1988): 44-49; Paul Slovic, "Perception of Risk," in *Science* 236 (1987): 280-285; Soraya Boudia and Natalie Jas, "Risk and 'Risk Society' in Historical Perspective" special issue of *History and Technology* 23, 4 (2007). Wolfgang Bonß even identified the very foundation of risk sociology in the debates on nuclear technology: Bonß, *Vom Risiko*, p. 9: '*So gibt es Risikoanalysen in einer institutionell wahrnehmbaren Form erst seit dem Ende der sechziger Jahre, wobei ihr Ausgangspunkt in den Kontroversen um die*

Society came out the month immediately following the accident but also because Beck's later article, in which he directly connected his theory to the event, provided a term that has been used ever since as kind of 'name affix' to Chernobyl: *anthropological shock*.[43]

Public perception of the nuclear risks is another field that has been researched intensively by sociologists.[44] Among scholars in this field, some have studied how this perception can be influenced, for example, through tailored risk communication.[45] Others – specifically with regard to Chernobyl: Christoph Hohenemser and Ortwin Renn[46] – are interested in how certain events, primarily accidents, influence this public perception of risk. What has proved problematic about the studies on the public perception of the nuclear risks is that some researchers take a very normative stance when investigating people's so-called 'overreactions' or 'irrational behaviours' and fail to reflect upon the basis of their judgements and the 'scientific facts' they rely on.[47] Risk perception, however, is not the only focus of the research carried out by sociologists and political scientists on the public debates over nuclear technology. The different frames as well as the individual arguments used in these debates have been investigated as well.[48] The field of media studies is, of course,

---

Atomtechnologie lag.' As to the specific social implications of nuclear technology, social philosophy has also been concerned with this topic, see for example: Günther Anders, *Endzeit und Zeitenende. Gedanken über die atomare Situation* (München: C. H. Beck, 1972); id., *Die atomare Drohung. Radikale Überlegungen* (München: C. H. Beck, 1981); Jean-Pierre Dupuy, *Pour un catastrophisme éclairé: quand l'impossible est certain* (Paris: Éditions du Seuil, 2002).

43 Ulrich Beck, "The Anthropological Shock: Chernobyl and the Contours of the Risk Society," in *Berkeley Journal of Sociology. A Critical Review* 32 (1987): 153-165. Like Ulrich Beck, Wolfgang Bonß in his book *Vom Risiko* strongly referred to Chernobyl in order to underpin and exemplify his arguments. According to him, Chernobyl illustrated the devastating consequences that were possible in the event of a failure of tightly inter-linked high-technologies ('eng gekoppelte riskante Hochtechnologien'). Bonß integrated his reflections on the discursive reactions toward Chernobyl in his theorization of coping with risks and uncertainties in *modernized modernity*. In this book, I will further refer to his reflections in later footnotes.

44 See for a classic work: Joop van der Pligt, *Nuclear energy and the public* (Oxford: Blackwell, 1992). For a study that deals specifically with the case of France, see for example: Yves Bouvier, "Risques perçus et risques industriels. Le nucléaire en France." In *Risques et prises de risques dans les sociétés industrielles*, ed. by Denis Varaschin (Bruxelles: Peter Lang, 2007): 139-150.

45 See for example the works of Baruch Fischhoff, "The Nuclear Energy Industry's Communication Problem," in *Bulletin of the Atomic Scientist* (2009): http://thebulletin.org/nuclear-energy-industrys-communication-problem (last accessed: 15 November 2013); id., "Risk Perception and Communication Unplugged: Twenty Years of Process," in *Risk Analysis* 15, 2 (1995): 137-145.

46 Christoph Hohenemser and Ortwin Renn, "Chernobyl's Other Legacy. Shifting Public Perceptions of Nuclear Risk," in *Environment* 30, 3 (1988): 5-11, 40-45; Ortwin Renn, "Public Responses to the Chernobyl Accident," in *Journal of Environmental Psychology*, 10 (1990): 151-167.

47 See for example: Pamela Abbott, Claire Wallace, Matthias Beck, "Chernobyl: Living with Risk and Uncertainty," in *Health, Risk & Society* 8, 2 (2006): 105–121. This study clearly shows how much a given judgement on the 'adequate' behaviour of people placed in a risky or uncertain situation is directly linked to the individual researcher's risk perception. In the case of Chernobyl, this is linked to the stance the researcher has taken with regard to the health impact of the accident.

48 The most important works carried out on Britain are: Karen Bickerstaff et al., "Reframing Nuclear Power in the UK Energy Debate. Nuclear Power, Climate Change and Radioactive Waste," in *Public Understanding of Science* 17 (2008): 145-69; Tuula Teräväinen, Markku Lehtonen, Mari Martiskainen, "Climate change, energy security, and risk – debating nuclear new build in Finland, France and the UK," in *Energy Policy* 39 (2011): 3434-3442; Ian Welsh, "The NIMBY Syndrome: Its Significance in the History of the Nuclear Debate in Britain," in *British Journal for the History of Science* 26, 1 (1993): 15-32.

closely connected to these types of studies.

1.2.5 Media Studies

Often, Chernobyl has been labelled a *media event*. This classification is evident in a broad range of research from the field of media studies that address this accident. It goes without saying that the interest media science scholars have turned toward the nuclear complex does not exclusively regard Chernobyl. The classic work that studies the interconnection of media discourse and public opinion on nuclear power is the research carried out by William A. Gamson and Andre Modigliani in which they investigated changing public opinions on nuclear power in the US in relation to media reporting on this issue from 1945 to the late 1980s.[49] Since the publication of this seminal study, media studies scholars have gone on to research, for instance, media agendas in particular countries[50] or the representation of critical voices in media coverage.[51] There are also specific studies that directly examine the media reporting on Chernobyl, such as Katrin Jordan's PhD project on French and German media reporting on the accident from 1986 to 1990.[52] Investigations of media reporting and comparisons of media discourses in various countries were amongst the earliest approaches used by social scientists to study Chernobyl in the immediate aftermath of the accident.[53] Many chose the same initial approach to investigate the impact of the Fukushima accident following 11 March 2011; however, special interest is now dedicated to the new social media platforms.

In addition to studies on news reporting, researchers in the field of media studies have also paid attention to the visualization and artistic narration of Chernobyl.[54] In recent years, a growing body of academic work that is concerned with the question of how people experience and visualize

---

49 William A. Gamson and Andre Modigliani, "Media Discourse and Public Opinion on Nuclear Power: A Constructionist Approach," in *The American Journal of Sociology* 95, 1 (1989): 1-37.

50 Philippe Blanchard, *Les médias et l'agenda de l'électronucléaire en France, 1970-2000* (Université Paris-Dauphine: PhD dissertation, 2010).

51 Felicity Mellor, "Left Unsaid: The Marginalisation of Scientist-Critics in Media Coverage of Controversial Technologies." In *Sciences and its Publics*, ed. by A.R. Bell, S. R. Davies, F. Mellor (Newcastle: Cambridge Scholars Publications, 2008): 157-178.

52 Katrin Jordan, *Tschernobyl und die Medien. Die Tschernobyl-Debatte in der bundesdeutschen und französischen Medienöffentlichkeit in der zweiten Hälfte der 1980er Jahre* (Humboldt Universität Berlin: PhD dissertation, forthcoming).

53 See for example: Commission of the European Communities, *An Analysis of the Print Media in Europe Following the Chernobyl Accident* (Luxembourg: Office for Official Publications of the European Communities, 1987).

54 See for example: Daniel Bürkner, "Eine vollkommen neue Realität: Transgression des Wahrnehmbaren in den Bildern Tschernobyls." In *Maßlose Bilder: Visuelle Ästhetik der Transgression*, ed. by I. Reichle, S. Siegel, A. Spelten (München: Wilhelm Fink, 2009): 189-206; Andrea Zink, "Approaching the Void. Chernobyl in Text and Image," in *Anthropology of East Europe Review* 30, 1 (2012): 100-112.

their visit to the *forbidden zone* has sprung up; these visits have become possible as a result of the increased marketing of the Chernobyl plant as a touristic sight.[55]

1.2.6 Miscellaneous: National contexts and Disaster Studies

Writing about Chernobyl debates in France and Britain would certainly not be possible without first acquiring background knowledge of the respective national histories and political systems of the two countries as well as knowledge of specific aspects that have shaped the trajectories of their respective Chernobyl debates. For example, the French Chernobyl debate cannot be understood without considering the societal role of the *Grandes Écoles* and *Grand Corps*.[56] The same is true in Britain where research in the Chernobyl debate requires knowledge of the British system of planning control and charity sector.

But it is not only national histories as well as specific political cultures in which Chernobyl debates need to be located. If we approach the subject more from the perspective of the impact and type of event, it is possible to connect Chernobyl to various other disasters, either in the national contexts – e.g. the *affaire du sang contaminé* in France, or the *Windscale Fire* in Britain – or in a global context. With regard to this last, the comparison between Chernobyl and Fukushima has become a prominent topic of academic research.[57] The emerging field of Disaster Studies[58] and the efforts in recent years to create a specific research field for Disaster STS[59] have provided a considerable amount of input, which has impacted how Chernobyl is studied and perceived and how it is compared to other disasters. This study contributes to this field of research in the way in which it places emphasis on the duration of the aftermath of disasters and on the important role that narratives and memory play in contributing to how a disaster is understood and to its meaning for a

---

55 For an analysis of tourists' photos of Chernobyl, see: Jeff Goatcher and Viv Brunsden, "Chernobyl and the Sublime Tourist," in *Tourist Studies* 11, 2 (2011): 115-137. For reflections of the role of Chernobyl as a touristic site, see: Philip R. Stone, "Dark Tourism, Heterotopias and Post-Apocalyptic Places: The Case of Chernobyl." In *Dark Tourism and Place Identity*, ed. by L. White and E. Frew (Melbourne: Routledge, 2013).

56 Important reference works for this field are: Pierre Bourdieu and Jean-Claude Passeron, *Les Héritiers – Les étudiants et la culture* (Paris: Éditions de Minuit, 1964); Marie Christine Kessler, *Les grands corps de l'État* (Paris: Presses de la fondation nationale des sciences politiques, 1986); Philippe Simonnot, *Les nucléocrates* (Grenoble: Presses universitaires de Grenoble, 1978).

57 See for example the book project: Thomas Bohn, Thomas Feldhoff, Lisette Gebhardt, Arndt Graf (eds.), *The impact of disaster: social and cultural approaches to Fukushima and Chernobyl* (forthcoming).

58 As a kind of foundation for this field, see: Havidan Rodriguez, Enrico L. Quarantelli, Russell Dynes (eds.), *Handbook of Disaster Research* (New York: Springer, 2006).

59 See in this regard for instance the workshops 'Historical and Contemporary Studies of Disasters' at the SHOT Conference 2012 in Copenhagen and the 'STS Forum on the 2011 Fukushima / East Japan Disaster' in Berkeley in 2013. For more information on these events, see: http://fukushimaforum.wordpress.com/ (last accessed: 15 November 2013).

given society. In fact, by its very nature the resolution of a disaster does not correspond to the concise moment in which the emergency measures are wrapped up and terminated. And if the truth be told, disasters as such do not come to an end. A political process is needed to negotiate a new 'normality' of daily life that compensates in some way for the effects brought about by the disaster itself.

1.2.7 Natural Sciences

Within the natural sciences, the variety of disciplines that contribute to the research on Chernobyl is manifold. Nuclear physics, meteorology, geology, biology, and nuclear medicine all focus on different aspects of this nuclear accident. Research projects have ranged anywhere from the analysis of the physical reactions in the reactor and the movements of the airborne radionuclides to the conditions of deposition of radionuclides in different geological settings and the uptake of radionuclides in plants. Of course, research has intensively dealt with the health effects of Chernobyl radiation on the human body.

When discussing the research produced on Chernobyl within the fields of history and anthropology of Eastern Europe (paragraph 1.2.1), I claimed that the volume of published work was far too large to be discussed in detail. This statement applies even more so to the body of literature from the natural sciences. A simple list of journal articles containing the word 'Chernobyl' in the title would fill an entire book. However, there is an additional reason for why I have chosen to refrain from giving a detailed account of the state of the art in Chernobyl research within the natural sciences: I mostly used these publications as primary sources for my research. I enquired into what presumptions certain studies were based upon, by whom they were financed, or quoted. In this regard, I paid particular attention to publications by French and British public research agencies that had or were looking into the impact of the fallout in their respective countries, and also to reports by international (governmental and non-governmental) organizations that had or did provide evaluations of the accident.[60] I applied the same approach to popular scientific accounts on

[60] The most important reports by international (governmental and non-governmental) organizations on the health impact of Chernobyl are: WHO, *Health Effects of the Chernobyl Accident and Special Health Care Programmes, Report of the UN Chernobyl Forum Expert Group "Health"* (Geneva: WHO, 2006); UNSCEAR, *Sources and Effects on Ionizing Radiation. UNSCEAR 2000 Report to the General Assembly with Scientific Annexes. Annex J: Exposures and effects of the Chernobyl accident*. (New York: United Nations, 2000); UNDP and UNICEF, *The human consequences of the Chernobyl Nuclear Accident – A Strategy for Recovery* (New York: United Nations, 2002); The International Chernobyl Project, *An Overview. Assessment of Radiological Consequences and Evaluation of Protective Measures. Report by an International Advisory Committee* (Wien: IAEA, 1991); The Chernobyl Forum, *Chernobyl's Legacy: Health, Environmental and Socio-Economic Impacts and Recommendations to the Governments of Belarus, the Russian Federation and Ukraine* (Wien: IAEA 2006); Ian Fairlie and David

Chernobyl by asking in which editing house they had been published, into which languages they had been translated and who had made reference to them.

The sheer volume of reports, numbers and data available on Chernobyl has resulted in a large variety of different 'truths' that circulate about Chernobyl among natural scientists. The aim of this book is to investigate the reception of these different 'truths' in public discourse, and not to add another opinion to the intense debate about which of these 'truths' is to the most credible. Before explaining in more detail the methodology of this approach, I will finish this paragraph with a reflection on the state of the art of Chernobyl research.

1.2.8 An attempt at a synthesis

The separation of research areas as introduced above is, of course, open for debate. Many of the cited works and scholars, in fact, easily conform to more than one of the categories listed. For instance, Gamson's and Modigliani's famous article is as well placed in the category 'Sociology and Political Science' as it is in 'Media Studies'. As occurs so often, attempts to strictly classify scholarly works from the humanities and social sciences into a specific sub-discipline reveals the somewhat artificially drawn demarcation lines between sub-disciplines rather than providing clarification. Therefore, this account on the state of the art of Chernobyl research and connected works is not meant to be a classification or systematization of these publications. Rather, it is intended to shed light on the wide range of research that must be considered and consulted when approaching the topic of Chernobyl. Clustering these works under the labels of different disciplines was a way to exemplify the wide variety of academic fields involved in research on Chernobyl. In addition, this clustering shows that a coherent established and well-defined field of 'Chernobyl research' does not exist. As in the case of 'nuclear studies', we are confronted with a wide range of approaches that, when assessed from a perspective external to the nuclear topic, seem to barely be connected at all.

Having introduced all of these different academic categories and scholarly approaches, it is now time to situate my own project within this matrix. Were I to have to choose one single category, I would try to squeeze the project into the 'Social and Cultural History of the Nuclear Age', but not

Summer, *The Other Report on Chernobyl (TORCH)* (Berlin/Brussels/Kiev: The Greens and EFA in the European Parliament, 2006); Greenpeace, *The Chernobyl Catastrophe: Consequences on Human Health* (Amsterdam: Greenpeace, 2006); German Affiliate of International Physicians for the Prevention of Nuclear War (IPPNW) / Gesellschaft für Strahlenschutz, *Health effects of Chernobyl. 25 years after the reactor catastrophe* (Berlin: IPPNW / Gesellschaft für Strahlenschutz, April 2011). For a partial analysis of some of these reports from a science studies perspective, see: Susanne Bauer, Karena Kalmbach, Tatiana Kasperki, “From Pripyat to Paris, from Grassroots Memories to Globalized Knowledge Production: Local and Transnational Scales of Chernobyl.” In *Nuclear Portraits*, ed. by Laurel MacDowell (Toronto: Toronto University Press, forthcoming).

before having changed the label so that it read 'Nuclear History with a strong recourse to STS approaches'. This self-categorization results from the way in which I conducted my research. Therefore, the following paragraphs will be dedicated to the methodological approach of my work.

1.3 The methodological approach of my research

Having shed light on the variety of scholarly approaches to Chernobyl in the previous section, I will now address the question of how I actually proceeded myself. The following paragraphs will explain how I approached my topic, what sources I used, how I categorized this material, and which questions informed my process.

1.3.1 Chernobyl in the public discourse: Actors and sources

When I began to work on Chernobyl in 2006, I was particularly interested in the way in which the 20th anniversary of the accident had been used to underpin political arguments in the field of energy policies. In consequence to my close adherence to the *Geschichtspolitik*[61] approach, I considered the commemorative activities undertaken by the various actors of the Chernobyl debate as a means with which these actors instrumentalized the accident as a political argument and to have discursively constructed a specific narrative of the historical event that corroborated the actors' claims and in so doing reinforced their interests and aims. When, in a second phase, I traced the French Chernobyl debate and its evolution over the time period from 1986 to 2006, I maintained this focus on the accident's anniversary. My actions, however, were dictated by a practical reason: Accounts on Chernobyl were not published on random dates, but appeared on the occasion of the accident's anniversary on 26 April. As time passed it was possible to see a corresponding decrease in the levels of interest, as was evident in the drop in the news coverage and publications dedicated to the accident. In April 1987, Chernobyl could still be identified as a theme, but in the years to follow it lost its news value. At the 5th anniversary of the event, interest was piqued once more, and again on the 10th and 20th, which served as occasions to once more discuss Chernobyl. Needless to say, the intermediate anniversaries did not evoke much debate. Therefore, my search for material was primarily directed toward the years 1986/87 (i.e. for the interpretations directly surrounding the

[61] *Geschichtspolitik*, in my use of the term, means the discursive usage of historical events, persons etc. as political arguments.

occurrence of the event), and the years 1996 and 2006; in doing, I was able to cover a broad span of time and to look for any changes and continuities in the narratives. Since this approach has proved very fruitful in my previous work on the French case study, I applied it to my work on Britain.

In practice, the adoption of this research strategy dictated that I search for all manner of material that contained a narrative of Chernobyl and that was present in the public discourse in 1986/87 or the accident's 10th or 20th anniversary. There were two important implications of this approach. Firstly, I did not consult any institutional archives. I was not interested in internal discussions within the concerned governmental agencies or anti-nuclear groups; this would have been a different project. The main criteria that I used in judging whether a source was to be included in my research was its public availability. To give a concrete example: An internal paper of the French radiation protection agency *Institut de Radioprotection et de Sûreté Nucléaire* (IRSN) that discussed the format and content of the agency's online dossier on Chernobyl for the 20th anniversary would not have met this criteria and hence would not have been included in my research. However, the very product of such a discussion, i.e. the online dossier published by the IRSN in 2006, was exactly the type of source I was looking for. It might be that not all people working for an institution like the IRSN agreed with the narrative that was presented in this dossier. But, again, this was not relevant to my research topic. What I was interested in were the narratives that the actors of the Chernobyl debate made available to the public. Thus, in the event that a person employed by the IRSN disagreed enough with the narrative presented in this dossier to have published a counter statement, I, of course, would have considered this publication as a source. (N.B. The example I have just described – apart from the IRSN online dossier as such – is just a fictitious construct used to illustrate my approach.) While this example clarifies how I identified my sources, it also alludes to who I considered to be actors. Actors – as I have used the term and applied it to my project – are individuals, groups, or institutions that actively take part in the Chernobyl debate in the way in which they communicate their points of view to the public. The fact that the ways in which they communicate their statements can vary brings us to the second important implication of my research focus: the variety of sources. Any given actor's statement can be communicated in manifold ways: through a book, a newspaper article, a leaflet, a website, a film, a documentary, a song, a photo, an art installation, a speech, etc. I tried to include as many of these different kinds of sources as possible. Often, a source consisted of a combination of text and visual elements: books and leaflets are frequently illustrated with graphs, photographs, or art works; a CD has an illustrated cover and an explanatory booklet. When analysing a source, I always considered these different elements and asked how they interacted together.

The locations from where I was able to gather most of my material were the French and the

British National Libraries: the *Bibliothèque nationale de France* (BNF) in Paris and the *British Library* (BL) in London. Thanks to the legal deposit rules in place in both France and Britain that oblige an editor to hand a copy of every publication that is printed in the country over to the national library,[62] I was in a lucky – and for an historian quite abnormal – situation, of not having to spend most of the time available to me consulting archival finding aids. Instead, I was able to directly access my material in the libraries and reinvest the time I saved in the search process in the consultation of a greater variety of material. Here again, I was able to benefit from the favourable situation of conducting my research in the BNF and the BL: In addition to their enormous book collections, both libraries have extensive collections of grey literature and government publications. They also boast a plenitude of audio-visual material that has been rendered searchable through the use of key words. Moreover, the building of the BNF (site François Mitterrand) incorporates the *Institut national de l'audiovisuel* (INA), where I was able to research French TV-reports on Chernobyl. With regard to newspaper reporting, I was able to benefit from the various databases offered by the BL. These databases were not only enabled to search specific newspapers using a key word, they were also designed – for most of the titles after the mid-1990s onward – to carry out cross-searches for the different newspapers. For the French case, I was able to consult the press clipping collection of *Sciences Po Paris*, which contains several files with French newspaper reports on Chernobyl and is still updated today. Although my research did not comprehend a media content analysis, it was important for me to look into British and French news reporting – for 1986 as well as for the three quinquennial anniversaries – in order to see how the topic was received in the media.[63] In particular, it was interesting to see what level of importance was attributed to Chernobyl in comparison to other topics and which aspects of the topic were taken up. Before concluding this description of my sources, I must add that the *Fondation EDF*, members of Chernobyl solidarity groups and individual activists were so kind as to provide me with additional 'grey literature'. Again, this was not 'internal material' but material that had been published but had not made its way into a library.

After having collected the research material, the next step consisted of arranging the sources

[62] Undoubtedly, the legal deposit rule only means that all printed publications *should* be filed with the national library, which is not always the case. Therefore, for every source I consulted, I always checked the references and bibliography in order to find out whether there were perhaps other publications in circulation that were perceived in the debate but had not found their way into the library. Again, to my luck and due to the fact that I was dealing with quite a contemporary timespan, it happened only rarely that a source I wished to consult was not part of the collection of the BNF or the BL.

[63] In this study, I do not treat *the media* as an actor in and of itself. Rather, I look at the actions of individual journalists and the ways in which statements by the various actors have been reflected in media reporting. Undeniably, *the media* is quite capable of playing the role of an actor in public debate, in particular with regard to agenda setting. But as I investigate media reporting particularly in relation to the events of 1986 and the quinquennial anniversaries, the topic was basically implicit in the event and the dates themselves, and thus the aspect of agenda setting is not of foremost importance in this context.

and of addressing the following question: Who said what at what point in time? Naturally, the identification of the actors of the debate resolved the first element of the question, i.e. the *who*, and mapping the discursive field responded to the second element, i.e. the *what*. Determining the *point in time*, and hence the third element of the question, implied putting the debate into context. The following paragraphs address what this all meant in practice and what methodologies informed this approach.

1.3.2 Who? What? When? In other words, the applied methodology

An investigation of the actors involved in the Chernobyl debate meant that two distinct activities had to simultaneously be carried out: identifying the actors and researching how they are interlinked. Therefore, I focused on personal and institutional interconnections as well as on argumentative networks, and I tried to determine who was informed and influenced by whom. However, the actors and their networks were not the only thing that intrigued me: I also wanted to understand the reasons that motivated their actions. While analysing the sources, I examined the ways in which the various actors used Chernobyl as an argument. Each author's arguments referred to different topic fields. For instance, a certain way in which Chernobyl was interpreted would produce an argument in favour or against a certain nuclear policy in the relevant national context; it either served to justify humanitarian action in an Eastern European country; or it was used as a statement against the political opponent in the Cold War legacy of East-West-appreciations. These few examples are but an illustration of the breadth of the Chernobyl discourse and demonstrate the variety of aspects embraced in this discourse. At the same time, these examples also reveal the political dimension that underpinned every interpretation and argument surrounding Chernobyl.[64]

[64] I do not consider *the political sphere* to be a clearly delimited field, but rather something that is being constantly challenged. The process of negotiating what topics should by determined through political decision-making is part of *the political sphere*. Given this consideration, I follow the approach of *New Political History* which focuses on the shifting lines between that which is deemed 'political' and that which is deemed 'un-political' over time, see: Ute Frevert, "Neue Politikgeschichte: Konzepte und Herausforderungen." In *Neue Politikgeschichte. Perspektiven einer historischen Politikforschung*, ed. by U. Frevert and H.-G. Haupt (Frankfurt/New York: Campus 2005). Wolfgang Bonß in particular has pointed to the changing boundaries of *the political sphere* within the context of dealing with risks and uncertainties in *modernized modernity*. According to Bonß, through the approach of risk communication, the very concepts of risk and harm undergo a process of (re)politicization. See: Bonß, *Vom Risiko*, p. 247: '*Aber faßt man ihn [den Begriff des Risikokommunikation] nicht zu eng, so verweist er auf Strategien im Umgang mit Unsicherheit, die im Kern auf eine kommunikative Verflüssigung der Grenzziehungen zwischen „sicheren" und „unsicheren" Aktivitäten hinauslaufen. Eine solche kommunikative Verflüssigung, die eine (Re-)Politisierung sowohl des Risiko- als auch des Schadenskonzepts bedeutet, unterscheidet sich von den ersten beiden Optionen [für den Umgang mit den Unsicherheiten der modernisierten Moderne, welche sind 1. Kalkulation und Inkaufnahme von (Rest-)Risiken und 2. Prävention und Schadensvermeidung] sowohl in ihrer Zielrichtung als auch im Verfahren. Während die Anhänger der Inkaufnahme am Dispositiv von vermeidbaren und unvermeidbaren Schäden festhalten und die Verfechter der Prävention darauf abzielen, die unvermeidbaren in vermeidbare Schäden umzudefinieren,*

Regardless of whether an actor self-identified as non-political, the consequences of the actions perpetuated by the actor were (inevitably) political, for their statements on Chernobyl simultaneously acted as statements in the related debates that were woven into the Chernobyl discourse. To clarify this point, I will discuss the example of humanitarian aid provided to Eastern Europe, which might seem to be the least political statement of the examples given above: An action such as the decision to distribute humanitarian aid follows certain presumptions regarding the health impact of the Chernobyl fallout. Were the fallout beyond the restricted zone not to be considered dangerous, there would be no reason to organize recreational visits to Western Europe for children from Belarus. Conversely, were somebody to see the need to bring these children on recreational holidays to Western Europe, the existence of an underlying statement on the hazardousness of low-level radiation to the human body would then be implied. Such an action, indeed, might have many other implications – I will deal with them in depth in the sections on the *Chernobyl solidarity movement* – but for now, I wish to focus on the existence of a political sphere the presence of which is implied in the use of Chernobyl as argument.

Every account on Chernobyl provides a certain 'image' of the accident and contains a certain interpretation of what happened, what is happening still and what will happen in the future. An account of the events can be expressed in many different ways: via a picture, a text, music – in as many different ways as are different the sources I spoke of above. It can be presented as an anti-nuclear manifesto, as an official report on health consequences published by an international organization, or as a photography book. No matter how 'objective' or 'subjective' it claims itself to be to its audience, it aims to make a certain statement about Chernobyl. I refer to the way in which these statements differ and contest as the *Chernobyl debate*, i.e. the Chernobyl debate is the variety of and relation between statements, interpretations and narratives on Chernobyl that have circulated in public discourse over time. What turns this variety into a debate is the setting; in other words, although each statement claims to truly represent the 'reality' surrounding Chernobyl, most conflict with the rest insofar as they are all based upon different 'facts'. The reason why we find such diverse 'facts' on Chernobyl in the scientific literature is mainly due to the unsolved controversy on health effects of low-level radiation. The existence of these multiple 'facts' inevitably leads to the situation wherein actors can pick the 'facts' that most closely conform to their convictions and then interweave them into their own unique narrative; they, therefore, construct their own separate and distinct 'truth' about Chernobyl. This implies that actors claim that any narrative that differs from their own 'truth' is 'untrue' or even call it out as a 'lie' inasmuch as the 'facts' upon which the

konzentriert sich die Risikokommunikation auf die Frage, wie handhabbare, zu verantwortende und damit akzeptable Risiken und Schadensfälle diskursiv bestimmt und konsensuell abgesichert werden können.'

competing 'truth' is based are considered to be false.

Yet, this way to explain the emergence of the Chernobyl debate should not give the impression that scientists constitute a system that is external to this debate. On the contrary, some play a prominent part as actors themselves. But as wrong as it would be to not consider them as actors, it would likewise be a mistake to declare that every single article that has ever been published by a natural scientist is an active part of the Chernobyl debate. The important line needs to be drawn between works that emerge as a result of a certain Chernobyl-related conviction and are undertaken with the aim of proving a certain statement that regards Chernobyl and those works that are not primarily related to the Chernobyl debate, i.e. those works that have not been undertaken to demonstrate the veracity or other of a certain statement or conviction regarding the Chernobyl 'reality'.[65]

The discussion surrounding the specific role scientists occupy in the Chernobyl debate touches upon the topics of study of STS researchers. Therefore, it is opportune to explain the way in which this approach informed my own research. Within the field of STS, concepts such as 'expert', 'knowledge', or 'lay person' are not thought of as fixed categories. Rather, they are seen as part of a societal discourse and the result of the specific formation the power structures under examination assume. For this reason, much of the work from the field of STS focuses on questions such as: Who is attributed the role of an expert in a specific field? What structures and dynamics come into play when a certain finding is attributed with the label 'true'? And, most importantly, what is the societal impact of these dynamics, particularly with regard to the implementation of new technologies? In this regard, STS goes a step further than Thomas Kuhn in his *Structure of Scientific Revolutions* in which he explains the emergence and establishment of new scientific paradigms.[66] From an STS perspective, it is not the internal structures of science as a system that require special attention, but the interface between science, technology, and society. The way in which I pay tribute to STS approaches in my own work is precisely the way in which I perceive categories such as 'expert', 'knowledge', or 'lay person' as fluid concepts as results of a specific power setting. This, however, is not to say that I place every statement that has ever been pronounced on Chernobyl on par with all of the others and declare one to be just as valid as any other.[67] Anna Veronika Wendland, in her

[65] The variety of topics that render Chernobyl a research topic for natural scientists is discussed in the paragraph on Natural Sciences, see 1.2.7. The purely inter-scientific debate, which takes place primarily through journal publications, does not fall within the scope of this research project. In this study, I specifically focus on the Chernobyl narratives present in public discourse. This implies that the communication of an actor must target a wider audience than only his or her academic peers. Therefore, the sources analysed in this study are publications that were purposely made available to a wider audience, hence, articles exclusively published in scientific journals have not been included in the range of sources considered here.

[66] Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago, IL: University of Chicago Press, 1962).

[67] I do not intend to apply here the categories introduced by Collins and Evans and claim my work to compatible (or not) with their categories of 'Wave Two' or 'Wave Three' of Science Studies. I do not agree with their assumption

review on my book on Chernobyl and France, criticized that I discussed and placed '*obscure theories about the course of the accident on par with the relevant literature*.'[68] To be sure, according to the internal logic of the scientific community it is 'incorrect behaviour' to dedicate equal space to both. But my argument, as it was in my book and still is now, is not about making a judgement of these statements; it is about asking what the logic behind these statements is and investigating in the reasons why they are brought forward.

It goes without saying that the field of STS is much broader than what I have described above, which was only a brief description of how the field influenced my methodological approach. Most of the research undertaken in this field, in fact, is not primarily concerned with historical perspectives but rather turns its attention toward current debates. But since the Chernobyl debate is still ongoing and, through Fukushima, has become even more pertinent than it was even ten years ago, connecting my work to STS was more fitting than connecting my work to the History of Knowledge,[69] although both approaches overlap in many regards, not least through their strong connection to Michel Foucault and Bruno Latour.[70] However, the methods used in STS most often originate from empirical social science research rather than from the hermeneutical approach of the humanities. It is for this reason that I (above) 'self-classified' my research in the field of 'Social and Cultural History of the Nuclear Age' and not in the very empirical social science-dominated discipline of STS. Although I did indeed borrow some very important research questions from STS, the tools I used in my search for the answers were drawn from the classical method of source analysis used in history as an academic discipline.

Approaching my material through the method of hermeneutical source analysis involved three different steps. First, I had to find out about the background of a specific source: who was the

---

that the deconstruction of a narrative or statement necessarily means to put an end to all reference points and, in doing so, making any agency impossible. To shed light on how arguments are constructed and on the existing power structures within a certain discourse is not the same as being indifferent with regard to the action taken in this thematic field. Therefore, a deconstructive approach also very much allows one to formulate an opinion and, especially when the 'precautionary principle' is applied, renders it possible for one to provide very clear recommendations for action.

68 Anna Veronika Wendland, "Rezension zu: Kalmbach, Karena: Tschernobyl und Frankreich. Die Debatte um die Auswirkungen des Reaktorunfalls im Kontext der französischen Atompolitik und Elitenkultur. Frankfurt am Main 2011," *H-Soz-u-Kult*, 20.08.2012 (http://hsozkult.geschichte.hu-berlin.de/rezensionen/2012-3-086).

69 A kind of conceptual manifest of the History of Knowledge is: Philipp Sarasin, "Was ist Wissensgeschichte," in *Internationales Archiv für Sozialgeschichte der deutschen Literatur* 36, 1 (2011): 159-172. Interestingly, this article refers to many works that are considered to be classics among STS scholars (like Donna Haraway) without, however, directly mentioning this flourishing field of research, which holds a strong position in Anglo-Saxon academia.

70 It is particularly in relation to *Actor-Network Theory* (ANT) that STS scholars and in recent years also progressively more historians refer to Bruno Latour. The growing interest of historians in ANT is closely linked to their greater focus on materiality within the framework of the 'material turn'. Although I do not follow this methodological approach in this book, the prospect of looking at the Chernobyl debates from an ANT perspective, in my opinion, seems promising. From this perspective, the radiation would be perceived as the actant and the ways in which it has shaped the action of the various actors of the debate and their interrelations, i.e. the network, would be examined.

author, when was it published, etc. The second step consisted of an analysis of the narrative presented in the source. When reading or contemplating the sources, I asked the following questions: How are the causes and the consequences of Chernobyl described? What kind of metaphors, references, and explanatory frameworks are used? What statements and wider interpretations are implied in this account? Following this analysis, I then attempted to locate the narrative presented in this source within the sphere of the Chernobyl debate. In order to be able to map this debate, I focused on specific key elements during my analysis of the narratives. In my work on the sources, I found that most of the narratives were based on an underlying structure. This structure consisted of key elements that can be described as a kind of variable. Depending on an author's point of view of these aspects, the narrative on Chernobyl took a certain shape. Identifying these key elements made it possible not only to compare the narratives but also to consider the Chernobyl debate as a discursive field. Elements from other debates had been imported to this discursive field, making it possible to assign meaning to Chernobyl. This discursive field can be seen as the wider reference frame within which Chernobyl was interpreted.[71] The key elements that constitute any given Chernobyl narrative are the following aspects: self-affectedness, radiophobia/apocalypse, and anti-Russian/anti-Soviet stereotypes. In the next section, I will provide a more detailed account of these key elements and explain why they are so decisive for the shape a given Chernobyl narrative will take on. For the moment, in the context of the methodological approach, I just wish to call attention to them and their general role.

This methodological approach of looking for elements that constitute and shape the Chernobyl debate is, in many regards, similar to the concept of frame analysis; in fact, in the previous paragraph I myself used the term 'reference frame' when speaking of the Chernobyl debate. However, I prefer to describe my approach with the concepts of 'narrative', 'debate' and 'discourse', and not 'frames'. The reason for this choice lies, again, in the general conceptualization of my research project: It is a project grounded in the discipline of history and not an empirical social sciences study. But the fact that within the social sciences a concept does exist, namely *framing*, that indicates a very similar perspective on the Chernobyl debate reveals just how fluid the boarders between disciplines often are and how important it was for my own research to take into consideration research undertaken in the fields of sociology and political science.

To conclude this section on the methodological approach of my research, I will discuss the last in the three-step process: the contextualization. Contextualization has already played an integral role in mapping the Chernobyl debate and in identifying its discursive referential framework.

[71] I use the term 'discourse' here in order to differentiate between the topic-bound term 'Chernobyl debate' and the more general topics that are linked to and, at the same time, negotiated in this debate. In using this term, I do not refer to any specific author from the field of discourse theory.

However, this is not all it has done. Contextualization also takes into account the temporal and locational spheres, i.e. the *when* and *where*. It asks for the context, or rather contexts, in which the Chernobyl debates have taken place. These contexts include, on the one hand, French and British national histories and political systems, with the various implications that these had on the different developments of the Chernobyl debates in each respective country. On the other hand, contextualization implies that not only the nuclear politics, policies and polities of each country are taken into consideration, their changes over time and the global debates regarding the civil use of nuclear energy are as well. Over all, it means the background knowledge that I extracted from the various works and authors (described in section 1.2) must be taken into account in order to understand why the Chernobyl debates in France and Britain developed the way they did. Many of the aspects that have shaped each debate become more visible from a comparative perspective. This is why the following section discusses the added value that the comparative approach brought to my work and explains the categories of comparison.

1.3.3 Chernobyl compared

The comparative work I undertake in this book takes place on several levels. First, I compare the different narratives within each national[72] Chernobyl debate. Second, I compare the different debates in Britain and France. And third, by comparing the debates on the different anniversaries of the accident, I examine the changes and continuities over time.

The comparison within the debate

With regard to the first kind of comparison, that which takes into consideration the narratives within each national context, I already introduced the categories of comparison: self-affectedness, radiophobia/apocalypse, and anti-Eastern European/anti-Soviet stereotypes. This paragraph aims to describe these categories in detail and explain why they are central to the Chernobyl debate. Although I refer to them one after the other, it goes without saying that they are very much interdependent, i.e. a certain conviction regarding one of these variables directly influences the

[72] The term 'national Chernobyl debate' does not imply that the debate has taken place on a national level. Many of the contributions to the debate actually addressed a local or regional level, e.g. the Lake District in the UK and Corsica in France. In some cases, these regional or local debates reached a national level and enjoyed wider public interest, while in other cases the issue remained at the regional or local level. Thus, when I speak of 'national Chernobyl debate' I am speaking of the larger contextual setting in which the debate took place and do not mean for this term to be a judgement on the scale of the debate.

statements on the others. However, as each category points to a different topic field addressed in the Chernobyl debate, I have decided to handle them separately. The different topic fields, or frames, that the narrative elements I compare are connected to are: national nuclear politics (→ self-affectedness), general debates on the health impact of low-level radiation (→ radiophobia /apocalypse), and the Cold War setting (→ anti-Eastern European/anti-Soviet stereotypes).

Firstly: The category of *self-affectedness*. Self-affectedness, as it is used here, is the way in which a certain actor considers his or her direct environment to have been impacted by the accident. This impact can either consist of a physical impact in terms of the radioactive fallout. Or it can take on a less physical connotation, meaning the perceived impact can consist in the transfer of the accident's scenario to national nuclear plants. The fear of eating contaminated vegetables bought in the local market or the fear that a similar accident would happen in a nearby nuclear plant are the direct result of perceived self-affectedness. Self-affectedness addresses primarily the local, regional and national context. If an actor perceives a strong self-affectedness, this could, for instance, result in a call for a certain policy to be implemented at the national level, such as: banning certain foodstuffs, increasing controls of radioactivity levels in the air and soil, instituting safety checks of national nuclear power plants, or even the shut down of national plants. On the other hand, in the case in which an actor perceives a low self-affectedness or even none at all, he or she would consider these claims to be the product of 'panic' or 'exaggerated fear' and would see no reason why the accident in Chernobyl ought to influence national nuclear policies.

Secondly: The category of *radiophobia/apocalypse*. The second category of comparison grasps the different ways in which the situation in Eastern Europe's regions most impacted by the radioactive fallout was evaluated. The two extremes of the scale used in the evaluation are marked by the explanatory concepts of 'radiophobia' and 'apocalypse', one on each end. The radiophobia concept implies that the increase in illnesses that can be observed in these regions is not actually the result of the radiation itself but rather a result of the exaggerated fear of the radiation and the psychological stress provoked by the resettlements and the rapid changes in the political situation in Eastern Europe in the late 1980s and early 1990s. 'Radiophobia' is often paraphrased in the sources, for instance as 'stress induced illnesses', as a means to avoid using the term itself since it was discredited in the early 1990s; the basic underlying concept, however, remains very much the same.[73] From the 'radiophobia' point of view, the best cure for the illnesses would be to bring these

[73] It is particularly in Eastern Europe where the term has become discredited. This occurred in the early 1990s with the emerging anti-Soviet protest movement, where the term evoked the Soviet authorities' cynicism towards the health situation of the clean-up workers, evacuees, and inhabitants of affected regions. See the section 'The concept of radiophobia' in chapter 3.3.2 for a detailed description of this concept. In reference to my work on radiophobia narratives within the context of Chernobyl, Joachim Radkau recently stressed that there is a long tradition of framing nuclear fears as psychologic illness: Joachim Radkau, "Der 'Größte Anzunehmende Unfall.'" In *Ökologische*

regions 'back to normal' and to give incentives for the resettled populations to move back to their home regions. The other end of the evaluating scale is informed by an apocalyptic image.[74] This reading of the situation considers that the worst is still to come: due to genetic mutations in humans, plants, and animals the true impact of the accident will come to light only very gradually, and there is nothing anyone can do to stop this process. From this perspective, it is necessary to take measures to resettle even larger portions of the affected populations. These evaluations of the situation in Eastern Europe are, of course, closely linked to an actor's perception of self-affectedness: If one believes that exaggerated fear is the source of increases in illnesses in Belarus, a health impact of the fallout in Western Europe would not even be considered possible. At any rate, the frames of reference are different. Self-affectedness refers to the actor's direct environment, whereas radiophobia and apocalypse focus on the situation in Eastern Europe.

Thirdly: The category of *anti-Eastern European/anti-Soviet stereotypes*. The third aspect I identified as being a basic structural element of a Chernobyl narrative is the way in which an actor draws on anti-Eastern European or anti-Soviet stereotypes to describe the accident scenarios. Using a kind of Cold War rhetoric, many narratives of Chernobyl contain comments on alcohol consumption and general imprudence with regard to how dangerous technologies were handled within the USSR and contrasts them with statements on the 'good behaviour' modelled in the West.[75] Yet, other actors dismiss forthright these framings and denote them as propaganda aimed to cover up problems in the Western nuclear enterprise. Thereby, Chernobyl narratives became a statement against the political opposition in the East-West discourse. Again, it is not my interest here to judge which of these points of view is more or less 'true';[76] what I am concerned with is the question as to

Erinnerungsorte, ed. by Frank Uekötter, pp. 55: '*Es fehlt in der Geschichte der Kernenergie nicht an Versuchen, Widerstand zu pathologisieren und als irrationale Psychose hinzustellen; der Topos der „Radiophobie“, den Karena Kalmbach in ihrem Beitrag diskutiert, steht insofern in langen Traditionen*.'

74 As with the case of radiophobia, the way in which Chernobyl is narrated as an apocalypse must also be placed in a wider discursive context. In this regard, the tradition of framing disasters and catastrophes with apocalyptic images and vocabulary ought to be considered. Furthermore, the bombing of Hiroshima and Nagasaki and the images that show the destruction of these cities have deeply influenced the imagery surrounding the impact nuclear technology has and has had.

75 Interestingly, Wolfgang Bonß pointed to this inherent element of Chernobyl narratives already in 1995 and predicted that it would continue to play a crucial role in evaluations and interpretations of the accident. Bonß, *Vom Risiko*, p. 242: '*Auf der einen Seite werden tatsächliche Schwierigkeiten häufig aus politischen Fehlentscheidungen, Nachlässigkeiten und / oder kalkulatorischen Fehlern erklärt, die unter „exakten“ Bedingungen und bei entsprechender Sorgfalt angeblich nicht auftauchen – typisch hierfür ist etwa der nach Tschernobyl auftauchende, stereotype Verweis auf unhaltbare Zustände in „östlichen“ Atomkraftwerken, die im Westen undenkbar seien. […, footnote] Zwar läßt sich nicht bestreiten, daß die Präventions- und Sicherheitsmaßnahmen ausgerechnet in jenen Gesellschaften unterbelichtet waren, die nach außen Planung und Gestaltbarkeit auf ihre Fahnen geschrieben hatten. Aber dies ändert nichts daran, daß die von Perrow (1984) beschriebenen und durch lineare Erhöhung der Sicherheitsmaßnahmen keineswegs zu behebenden Unsicherheiten auch im Westen gegeben sind. An eben dieser Stelle ist offensichtlich der alte Ost-West-Gegensatz ungebrochen erhalten geblieben, und sofern sich hierdurch traditionelle Grenzziehungen und Perzeptionsmuster aufrechterhalten lassen, dürfte diese Akzentsetzung noch einige Zeit die Diskussion beherrschen*.'

76 For a well-informed account on the security culture in the Chernobyl plant, see: Schmid, *When safe enough is not good enough*. Schmid's work also points to the fact that within the Chernobyl debate in the Soviet Union, the

how the legacy of Cold War propaganda and side-taking is present in the Chernobyl debate and the role it held in the interpretation of the accident. In relation to the other two categories of comparison, self-affectedness and radiophobia/apocalypse, this aspect of anti-Eastern European/anti-Soviet stereotypes plays a less prominent role in many of the sources. It was primarily used in accounts published in 1986 and 1987, which addressed the acute phase of the accident: the event as it unfolded and the immediate aftermath. The moment that the focus of my research was directed more toward the debate surrounding the health impact of the fallout than on the technicalities regarding the accident, the other two categories of comparison were more central to my analysis.

However, in March 2011, reflections on cultural stereotypes present in the reception of nuclear plant accidents gained new momentum. In many regards, the way in which many of the actors I had researched within the context of the Chernobyl debate reacted towards the events in Japan and how they narrated and framed Fukushima were extremely similar to the way in which they had narrated and framed Chernobyl. But there was one decisive element that was not applicable in 2011: the Cold War frame. This 'lack' in the narrative structure, however, was quickly filled with an element that in a way resembled the argument of anti-Eastern European stereotypes: i.e. the usage of the 'Japanese hierarchy bondage' stereotype.[77] What had now come under fire was not the 'Eastern European carefreeness' but the 'Japanese authoritative culture', which was held responsible for the course of the events. This change in a decisive element of the discursive structure of the narrative explaining the occurrence of a large scale nuclear accident highly influenced also the other discursive categories of self-affectedness and radiophobia/apocalypse that are present in the Fukushima narratives, as well. As I stated above, a conviction that regards one of the variables will directly influence the statements made with regard to the other variables. In this regard, in Western Europe, the perception of self-affectedness (in the way in which the accident's scenario is transferred to the national fleet of nuclear plants) was even stronger in the case of Fukushima than in the case of Chernobyl. The very fact that a *stress test* was applied to all rectors in the European Union (EU) is a telling example of this perception. To be sure, the technical features and the design of the destroyed reactors in Chernobyl and Fukushima was completely different.

argumentative use of national and cultural stereotypes had yet another dimension: Moscow placed the blame on the Ukrainian plant workers. However, in the Western European Chernobyl debates, the differentiation between different groups and ethnicities within Eastern Europe or the Soviet Union barely played a role. Therefore, I did not consider this differentiation in my comparison.

77 The interpretation of Fukushima as a 'Japanese Disaster' that has figured prominently in many accounts on the events was in some regards certified by the English executive summary report of the *Nuclear Accident Independent Investigation Commission* (NAIIC). In his foreword to this report, the chairman of this *Diet*-appointed commission, Kiyoshi Kurokawa, called the events at Fukushima a '*disaster "Made in Japan"*': The National Diet of Japan, *The official Report of the Fukushima Nuclear Accident Independent Investigation Commission. Executive Summary* (2012), p. 9, http://www.nirs.org/fukushima/naiic_report.pdf (last accessed: 15 October 2013).

Thus, technical considerations played a decisive role in the decision to re-evaluate the security features of all of the reactors within the EU. But in public discourse, the fact that reactor design of the Fukushima Daiichi reactor was more similar to Western European plants than those of the Chernobyl RBMK reactor was not the primary issue that triggered the sudden concern Europeans had with regard to the safety issues of their neighbouring power plants. The reasoning was rather: 'If such an accident can happen in such a well organized country like Japan, then a severe nuclear accident might very well be possible in the Western world, too.' In the case of Chernobyl, however, the reasoning had been the opposite: 'Since the accident happened in the USSR, it is impossible that a similar disaster could strike in the West.' Contemplation of this crucial difference between perceived Western European self-affectedness in the case of Chernobyl and Fukushima directed my focus toward the anti-Eastern European/anti-Soviet stereotypes present in the Chernobyl narratives. Therefore, in this regard, the events of 2011 changed the perspective on my topic but did not alter my project as such. Although many suggested I should change my project and conduct a comparison of Chernobyl and Fukushima debates in one country rather than compare the Chernobyl debates of different countries, I stuck with my initial project. This decision is based on two reasons. On the one hand, I think that the Fukushima debate is far too 'fresh' and is still in the process of unfolding rendering an accurate analysis of the narratives and interpretations on this event difficult if not impossible. On the other hand, the constant and often not very well informed references to Chernobyl within the Fukushima discourse have proved that there is serious need to carry out research on the Chernobyl debate.

This book does not provide a general theory on how to analyse discourses on nuclear accidents. I think, however, that my analytic categories, findings, and hypotheses can indeed prove useful for researchers who deal with other (nuclear) disasters.[78] With the Fukushima disaster, it became evident that regardless of where the disaster occurs, the ways in which large-scale nuclear disasters are technically, socially, and discursively approached are rife with parallels and similarities. But this work is not only about Chernobyl and nuclear accidents in general. This research also sheds light on important aspects of the social and cultural history of France and Britain. The following section introduces these aspects, which served as the comparative categories

[78] A workshop in 2012 cast light on the important role research on Chernobyl has in the emerging field of disaster studies: *Historical and Contemporary Studies of Disasters: Placing Chernobyl, 9/11, Katrina, Deepwater Horizon, Fukushima and Other Events in Historical and Comparative Perspective*, Society for the History of Technology annual conference 2012, Copenhagen Business School, co-sponsored workshop by SHOT Prometheans, SHOT Asia Network and Teach 3.11, information on the workshop participants, papers and discussions are available online: http://shotprometheans.wordpress.com/workshops/2012-workshop/ (last accessed: 15 October 2013). Recently, in the context of Fukushima research, strong efforts have been made to establish a transnational research agenda for the new field of disaster STS. See in this regard the documentation of the inaugural meeting of this forum in Berkeley in May 2013: http://fukushimaforum.wordpress.com/workshops/sts-forum-on-the-2011-fukushima-east-japan-disaster/ (last accessed: 15 October 2013).

that gave structure to my comparison of the two nations.

The comparison of the French and British debates

Why choose national entities for a comparison when we are dealing with a nuclear power plant accident – a transnational event par excellence – whose fallout completely ignored every border, even an *iron curtain*? The answer is, because it is the framework of the nation state that most influentially determines the debates on nuclear power in a society and therefore also the debates on Chernobyl, which is entangled with the former. Transnational aspects clearly play an important role in this debate, especially when it comes to the exchange of information, expert evaluation, networks of anti-nuclear activists, globally acting companies and lobbying groups, and international organizations; it is for this reason that an entire chapter of this book is dedicated to the transnationality of the Chernobyl debate.[79] But how all these influences interact and impact a debate on a specific political topic, such as nuclear energy, is very much dominated by legal and institutional aspects, and therefore by the nation state. The field of nuclear politics is a particularly clear example. Although many aspects of this field are regulated at the international level, through, for example, the *International Atomic Energy Agency* (IAEA), the *International Commission on Radiological Protection* (ICPR), or *Euratom* the decision to build or close down nuclear plants is taken at the national level. Concerned neighbour states might raise their voices, as Austria recently did in the debate about the Czech power plant *Temelín*, but the ultimate decision is made by national authorities: be it the German *Bundesrat* and *Bundestag* in the 2010-2011 debate on the *Laufzeitverlängerung* (the extension of the active lifespan of German nuclear power plants); the French President, Prime Minister and selected technocrats in the case of the *plan Messmer*; or the Austrian people in the form of a referendum against activating the power plant *Zwentendorf*.

As I stated above, the comparison of the two national case studies France and Britain is particularly fruitful due to their shared history as nuclear powers.[80] Between the two, there are many similarities regarding their social and cultural nuclear history. Therefore, it is even more interesting to ask why the trajectory of the Chernobyl debates in these two countries has been so different; why Chernobyl did become a *lieu de mémoire*[81] in France, but did not in Britain? In order to find an

[79] For a recent publication that emphasized the importance of transnational approaches in nuclear history, see: Astrid Mignon Kirchhof and Jan-Henrik Meyer (eds.), "Global Protest against Nuclear Power. Transfer and Transnational Exchange in the 1970s and 1980s," in *Historical Social Research* 39, 1 (2014): 165-190.

[80] In considering a *tertium compartionis* other than the status as nuclear power, it could be very interesting to conduct, for instance, comparative research into Chernobyl debates in Sweden and Turkey, two non-USSR countries that received significant levels of fallout, or to compare reactions in Denmark and Germany, two countries in which anti-nuclear convictions were particularly strong in 1986.

[81] On Chernobyl as a *lieu de mémoire*, see Karena Kalmbach, "Radiation and Borders: Chernobyl as a National and

answer to this question, I compared the discursive frameworks within which the debates are based. I was interested to see whether there were different reference points that structure the various narratives brought forward in the two national contexts. Once I identified the different reference points and arguments in the debate, I researched their historical and political context in order to find out why a certain reference worked or was needed in narratives in one national context and why it was not in the other. Through my research, I identified the following aspects as central to the different development of the debates: the formation, role and status of nuclear 'experts' and 'counter experts'; the changes to the national nuclear politics, policies and polities as well as to their pro-nuclear versus anti-nuclear orientation; the shape, political role and protest culture of the anti-nuclear movement; (the problematic issues of) the national fleet of nuclear power plants; and the importance of charities. I will come back to all of these aspects in more detail during the course of the book, when I analyse and contextualize the sources. I mention them here in order to indicate along which lines I conducted the inter-national comparison. However, in relation to these elements of the historical and political context, there is one important term I must introduce inasmuch as it will figure prominently in my arguments: *techno-political regime*. This term was shaped by Gabrielle Hecht in *The Radiance of France.* Hecht used this term to explain the different approaches employed by the *Commissariat à l'Énergie Atomique* (CEA) and *Électricité de France* (EDF) with regard to nuclear policies in the post-war period. My use of the term differs from her use insofar as I do not make a distinction between different regimes within one state. Nevertheless, my use of the term describes the same '*linked sets of individuals, practices, artefacts, programs, and ideologies*'.[82] In this regard, I consider *techno-political regimes* to constitute an essential part of the historical and political context of the two countries. I use this expression to cluster together the contextual aspects listed above in as far as they are linked to the nuclear complex of a country.

I would like to conclude this introduction with an explanation as to how I structured the following chapters and why I have structured them as I have. In addition, I will give a brief summary of my analytic categories.

1.3.4 The time frame and structure of the book

Because I approach the Chernobyl debate from an historical perspective, and because I am interested in changes and continuities in the debate over time, I structured the text along a time line.

Transnational Site of Memory", in *Global Environment*, 11 (2013): 130-59.

[82] Hecht, *Radiance of France*, p. 56.

I begin my analysis in 1986, the moment of the accident, and – for the comparative part of this book – I will stop in 2006, at the 20th anniversary of the accident. I elaborated on the reasons for my choice regarding the anniversaries above, but I have not yet specified why my analysis stops in 2006. Why did I not include the next important anniversary, 26 April 2011? The reason for which I did not include the 25th anniversary is that the memory work on Chernobyl as well as the nuclear discourse as a whole at this moment in time have been strongly influenced and overshadowed by the recent Fukushima accident. Therefore, I decided to limit my analysis to 2006 in order to concentrate on the Chernobyl debate as such. Of course, I will need to make references throughout to events, developments, persons, etc. that lie outside this time frame, especially when explaining the contexts of the debate. There are also moments in which I follow a certain actor over time and then jump back in time to do the same with another actor. However, the basic red line in this book goes from 1986 to 2006.

With regard to the actors: I tried to assemble them into *actor clusters*. This was not only a way to avoid confusion and reduce the risk that the reader would get lost in an endless list of individuals and organizations, but it was also a good way to highlight the similar backgrounds of the narratives that emerged from these actor clusters. I identified the following four clusters as the basic structural reasons underlying an actor's involvement in the Chernobyl debate: public authorities (government, radiation protection agencies); nuclear power industry (companies, associations); anti-nuclear groups; Chernobyl solidarity movement groups. I analysed the publications of each and paid careful attention to the narrative categories: self-affectedness, radiophobia/apocalypse, anti-Eastern European/anti-Soviet stereotypes; this is the other red line that runs through this book. From an inter-national perspective, I contrast the narratives brought forward by the actors of each separate cluster. Throughout the text, I interweave my explanations and hypotheses as to why different narratives have developed in theses two national debates. This means that within each sub-chapter – primarily in their conclusions – I highlight the context within which a certain actor cluster operates. This context primarily consists of references to the formation, role and status of nuclear 'experts' and 'counter experts'; the changes to the national nuclear politics, policies and polities as well as to their pro-nuclear versus anti-nuclear orientation; the shape, political role and protest culture of the anti-nuclear movement; (the problematic issues of) the national fleet of nuclear power plants; the importance of charities. In this regard, I have not written just one single chapter to explain context; instead, I tried to combine throughout the book the analysis of the sources with their interpretation and contextualization.

In order to fully focus on the comparison between the French and British debates in the first chapters, I decided to dedicate a separate part of the book to transnational aspects of the Chernobyl

debate. By analysing the reception of Eastern European authors in the different national contexts and investigating Chernobyl as a cultural element in literature and photography, I wish to call attention to the entanglement of actors and arguments; this is an entanglement that is responsible for the fact that different national Chernobyl debates exist as does a transnational Chernobyl debate that brings together actors and arguments that originate from various national contexts.

This book gives more space to British sources than to French sources. There are two reasons for this decision: on the one hand, my book on the French Chernobyl debate already discusses and quotes the French material in detail. On the other hand, I considered it important to deal with the British Chernobyl debate in depth and introduce as many actors as possible since this debate has not yet been a topic of historical research. One abundantly clear illustration of this fact is that a search for the key word 'Chernobyl' in the *Bibliography of British and Irish History* (BBIH) in 2012 showed zero results. In addition, the civil use of nuclear energy in Britain has, in comparison to works on the military use, been rather underrepresented in nuclear history. Regarding the more recent time span, which has not been covered by the work of the two main British nuclear historians, Margaret Gowing and Lorna Arnold, only a handful of publications exist that analyse the nuclear complex through historical sources. From the social science perspective, only Brian Wynne has written anything on the topic of Britain and Chernobyl, albeit with a clear STS perspective on knowledge production and experts-laypersons-relations regarding the early restrictions on sheep farms. Therefore, I decided to place a stronger emphasis on British material. The accounts on France are more of a synthesis, and only parts of the material that was already presented in my publication on the French Chernobyl debate is quoted again; in approaching the French content as such, I have given a strong focus to the categories of comparison. Last but not least, I was not always able to deal with each actor cluster in the same depth because of differences in the number of available sources.

Before turning to the comparative analysis, I would like to give a brief summary of my analytic categories. In the first part of this book, I analyse the narratives and statements on Chernobyl that different French and British actors[83] have published in the period of time between 1986 and 2006. These narratives and statements consist of many different elements. The elements

[83] The main actors of the Chernobyl debate can be grouped into clusters: public authorities (government, radiation protection agencies), nuclear power industry (companies, associations), anti-nuclear groups, and Chernobyl solidarity movement groups.

central to this analysis are: self-affectedness,[84] radiophobia[85]/apocalypse, and anti-Eastern European/anti-Soviet stereotypes. I refer to the way in which these statements and narratives differ and contest as the *Chernobyl debate*, i.e. the Chernobyl debate is the variety of and relation between statements, interpretations and narratives on Chernobyl that have circulated in public discourse over time. The Chernobyl debate is a discursive field that incorporates elements from other debates in order to give meaning to Chernobyl. This discursive field can be seen as the wider frame of reference within which Chernobyl has been interpreted. The most prominent of these frames are: national nuclear politics, general debates on the health impact of low-level radiation, and the Cold War setting. These discursive frames are mirrored in the main narrative elements detailed above: self-affectedness (→ national nuclear politics), radiophobia and apocalypse (→ general debates on the health impact of low-level radiation), and anti-Eastern European/anti-Soviet stereotypes (→ the Cold War setting). The national Chernobyl debates must be located in their relative national contexts. The most important thematic aspects of these national contexts are as follows: the formation, role and status of nuclear 'experts' and 'counter experts'; the changes to the national nuclear politics, policies and polities as well as to their pro-nuclear versus anti-nuclear orientation; the shape, political role, and protest culture of the anti-nuclear movement; (the problematic issues of) the national nuclear fleet of power plants; and the importance of charities. In as far as these contextual elements are linked to a country's nuclear complex, I refer to them as the *techno-political regime*. In the following chapters, the French and British Chernobyl debates will be analysed against the backdrop of these different national contexts. In the second part of the book, I examine the transnational elements of the Chernobyl debate.

For readers who are unfamiliar with the British or French nuclear sector, and who therefore run the risk of getting lost in the many abbreviations of the myriad institutional names, I include below a rough overview of the main actors in this field. The juxtaposition in the following chart does not in any way suggest a similarity of responsibilities, status, size, budget, etc. between the French and British institutions; its only intent is to locate these institutions in their respective fields of activity. In addition, the clear division of tasks is rarely clear, especially in the early days of the nuclear enterprise: at this time, the main nuclear authorities, CEA in France and UKAEA in Britain,

[84] 'Self-affectedness' means here the way in which a certain actor considers his or her direct environment to have been impacted by the accident. This impact can consist of a physical impact in terms of radioactive fallout; but it can also take on less physical connotations and refer to the transfer of the accident's scenario over to national nuclear plants. Thus 'self- affectedness' refers to the national context, whereas 'radiophobia and apocalypse' refer to the situation in Eastern Europe.

[85] The concept 'radiophobia' (which is often paraphrased in the sources since the term has been discredited) implies the assumption that the increase in illnesses that can be observed in the most affected regions in Eastern Europe is not the result of direct radiation exposure but rather is a result of an exaggerated fear of this radiation and the psychological stress provoked by the resettlements and the rapid changes in the political situation linked to the break-up of the Soviet Union in the late 1980s and early 1990s.

not only carried out research but were at the same time responsible for radiation protection and nuclear security on their sites; and upon which nuclear plants had been built, the operation of which fell also under their responsibility.

	France	**United Kingdom**
Radiation Protection/Nuclear Security	SCPRI, IPSN, IRSN, ASN	NRPB, NII, HPA
Plant Operation	EDF	CEGB
Research	CEA	(UK) AEA
'Counter-expertise'	CRIIRAD, ACRO, GSIEN	

II BRITISH[86] AND FRENCH[87] CHERNOBYL DEBATES: A COMPARISON

In the night between 25 and 26 April 1986, the nuclear power plant *Lenin*, situated approximately 100 km north of the Ukrainian capital Kiev, was the scene of an accident that would go down in history under the name of the nearby town called *Chernobyl*. *Lenin* consisted of four reactor units of the RBMK model[88], each capable of generating up to 1,000 Megawatts. The plant had been build during the 1970s and 1980s, and in 1986 two new blocks were under construction. The supply city Pripyat had been contemporaneously erected nearby the power plant. At the time, it was one of the most modern cities in the USSR, a place that attracted young engineers and their families from all over the country. This symbiotic industrial-living-complex was considered the materialization of the USSR's technical progress. In this night in April, during a systems test, a series of explosions occurred in unit number four. The cooling system broke down and the graphite, used as a moderator in RBMK reactors, caught on fire. As the building housing the reactor was destroyed by the thermal explosions, radioactive material was released directly into the environment.[89] The fires generated smoke and dust that carried radioactive particles high into the air, which led to a global dispersion of the radionuclides. The intensity of local contamination however, was dependent on more than just the movement of the air masses. It also depended on the meteorological constellations and geographical settings. But Chernobyl was not only a transnational event with regard to its physical fallout. Its media coverage also spread on a global scale. The public in the USSR only read about the events on 28 April in a short news brief released by the state press agency TASS, and no further information was provided. Several days later, Soviet television reported two deaths and declared that the radiation situation had been stabilized. At the same time, the media in the West, alarmed by the detection of radioactive fallout in Scandinavia, was already speculating about the causes of the accident and the possible total death toll. But while outside the USSR anti- and pro-nuclear activists had already engaged in a fight over the interpretation and political consequences of Chernobyl, the accident was still ongoing. Firefighters were only able to extinguish the graphite fires days later, afterwhich rescue and clean-up workers moved in to take their place. These *liquidators*, as they

[86] Although the terms *Great Britain* or *Britain* in their strict geographical sense only refer to the largest of the British Isles, I use these terms in this text in conformity with the most common use of these expressions, i.e. as synonyms for the state of *The United Kingdom of Great Britain and Northern Ireland*, or in short *United Kingdom*, or the *UK*.

[87] In my book *Tschernobyl und Frankreich*, I offer a detailed account of the French Chernobyl debate. An article that offers a synthesis of my work on France is forthcoming in: Arndt, *"Anthropologischer Schock"*. The parts of this book that address the French Chernobyl debate are based on the material I used for these publications. However, in this book I look at them through the categories of comparison I introduced above.

[88] The *Reaktor Bolshoĭ Moshchnosti Kanalnyĭ* (RBMK) is a graphite-moderated and light-water-cooled reactor that was developed in the Soviet Union and built only in facilities on its (former) territory.

[89] A detailed description of the evolution of the accident may be found in most publications that provide information on Chernobyl to a broad audience. Therefore, I refrained from adding yet another description to the already existing literature keeping the account of the accident itself rather short.

were called, were those responsible for de-contaminating the other plant buildings, but they also erected the *sarcophagus* – the containment building that even today encloses the destroyed reactor number 4 – and buried the contaminated soil, machines and debris. In all, more than 600,000 men and women were called to Chernobyl to work in the clean-up crews. Even while the other three units were reconnected to the grid by the end of the year, an area with a radius of 30 km around the plant was declared a *forbidden zone*, and placed under military control. All of the people in this region were evacuated, most of which hoped and believed that they would soon return to their homes. But that would never happen. Pripyat became a ghost town and the smaller settlements in this region were demolished in the years to come. As measurements of the radioactivity in the environment continued to reveal dangerously high levels in the most contaminated areas of Belarus – the country that was hit with the most intense fallout – the initial number of 116,000 evacuees climbed to 350,000.[90]

2.1 1986–1988: Direct reactions and early narratives

The news of the accident in Chernobyl reached France and the UK at the same time. In France, it was the *Première Cohabitation* – with François Mitterrand as President and Jacques Chirac as Prime Minister – that was confronted with the events in the Ukraine, while in the UK, Margaret Thatcher's government received the news. In both countries, public authorities initially proclaimed that the radioactive fallout would not have any serious impact on their country. This statement was profoundly called into question in France and resulted in an intense debate regarding whether the authorities had deliberately held back the true figures of the fallout intensity, a polemic referred to as the *affaire Tchernobyl*. In Britain, strong restrictions had to be implemented with regard to sheep farms some weeks after the accident when it was discovered that the highland sheep had become too radioactive to be marketed after having grazed on contaminated soil; however, these restrictions did not result in a long lasting public scandal. This chapter will focus on why the perception of the dangers associated with the radioactive fallout deposited in France and Britain differed so greatly and why the role public experts played in the evaluation of this fallout was perceived so differently in these two countries. The French and British news reports presented below are intended to give the reader an idea of the way in which the public first learned about the accident.[91]

[90] For further details on the resettlements and clean up workers, see for example: Sahm/Sapper/Weichsel, *Tschernobyl: Vermächtnis und Verpflichtung*.

[91] Although I use media reports as sources, it is not my aim to provide a broad media content analysis on Chernobyl. Through this account on media reporting I want to illustrate the narratives and images the public was presented with when it first learned about the event. In this study, the media is not considered an actor in its own right but is

Britain

As an example of early British newspaper reporting, this section provides a synthesis of articles on Chernobyl published in the daily national quality newspaper *The Guardian*.[92] This choice results from the fact that *The Guardian* can be considered as the newspaper including the widest range of opinions on nuclear power in its editorial. In addition, it is the British newspaper most dedicated to investigative journalism; its readership is mostly left-liberal oriented.

'*Radioactive Russian dust cloud escapes*' was the headline presented to the British public on 29 April; it was the first article of the Chernobyl disaster to be released by *The Guardian*. Readers were informed: '*a major nuclear power accident in the Soviet Union yesterday sent a cloud of radioactivity drifting across much of Scandinavia*.'[93] The article went on to quote the TASS announcement: '*an accident has occurred at the Chernobyl nuclear power plant as one of the reactors was damaged. Measures are being taken to eliminate the consequences of the accident. Aid is being given to those affected. A government commission has been set up*.'[94] Asides from reporting on the radiation levels in Scandinavia, the article essentially focused on the technical details regarding radioactive fallout detection and not on its possible health consequences. In this regard, a positive story of British preparedness for such an event was provided: '*If the Soviet plume begins to drift towards Britain – and there have been easterly winds – the National Radiological Protection will quickly pick up the signs from its fall-out monitoring stations.*'[95]

The articles printed in *The Guardian* the following day addressed various aspects of the accident. It was not only the situation at the site of the accident itself that was discussed,[96] but Chernobyl was discussed within the context of global energy policies,[97] and the possible impact this disaster would have for the national movements in Belarus, Ukraine, Latvia, and Lithuania.[98] An entire article was dedicated to the particularities of the RBMK reactor, interestingly mentioning that '*it was also a graphite-uranium core which caught fire in the Windscale accident of 1957, releasing*

primarily attributed the role of a 'distributor' and 'amplifier' that obtains – in the further course of the Chernobyl debate, namely on the anniversaries – input from the actors of the debate and spreads (or not) these arguments to a broader audience than the actors would normally have reached with their own publications. However, there are of course journalists who became themselves actors within the Chernobyl debate, such as Hélène Crié and Noël Mamère in the case of France.

92 The articles have been accessed through the *ProQuest Database* in the British Library, using the search key 'Chernobyl'.

93 David Fairhall, "Radioactive Russian dust cloud escapes," in *The Guardian*, 29 April 1986, p. 1.

94 Ibid.

95 Ibid.

96 Martin Walker, "Silence covers 'zone of death'," in *The Guardian*, 30 April 1986, p. 1.

97 Hamish McRae, "The Soviet nuclear disaster seems likely to put King Coal back on the throne," in *The Guardian*, 30 April 1986, p. 24.

98 Martin Walker, "The vision consumed in the fire this time," in *The Guardian*, 30 April 1986, p. 23.

large amounts of radioactive iodine and other materials over a wide area.'[99] Comparisons to the Windscale Fire – the worst accident ever to have occurred in a British nuclear plant[100] – were also made in this news article to describe the ongoing situation at Chernobyl and touched upon such aspects as the amount of radioactivity, the size of particles released into the environment, and the actions taken to extinguish the fires. The author of this article was rather critical towards the first official statements and asserted that '*although it is being claimed by Western "experts" that all power reactors in the West have secondary containment, this is not true. Britain's Magnox reactors – which have dominated the nuclear programme – are without secondary containment because it was regarded as unnecessary at the time they were designed*.'[101] The journalist David Fairhall, in a different article, took his analysis of the official statements on Chernobyl a step further and questioned the reasons underlying the strategy to put distance between the RBMK reactor and the events in the Soviet Union from the actual situation in the UK: '*The winds in Russia are blowing eastwards, not westwards towards the UK, and the burning Chernobyl reactor is of a type not used in the West. So can we now relax and get on with our own nuclear power programme without worrying about the Soviet disaster? That is certainly what the British nuclear industry will be recommending. They will point out that the Chernobyl plant is a peculiarly Soviet design […]*.'[102] Thus, in the reporting during the days immediately following the accident at Chernobyl, the articles in *The Guardian* instantly and directly made the connection between Chernobyl and the British nuclear enterprise. The event was first explained drawing on the background provided by the national Windscale Fire incident, afterwhich the articles enquired into how the Chernobyl accident would impact the new build Pressurized Water Reactor (PWR) project in Sizewell. Thus with regard to national nuclear policies, the journalists expressed a strong perception of self-affectedness. With regard to possible (health) effects of the fallout in Western Europe, however, their perceived self-affectedness was quite low: '*In Britain it seems unlikely that we shall feel any effects at all*.'[103]

During the next days, reporting was primarily concerned with the British students evacuated from Kiev,[104] speculations on the death toll[105] and the debate over whether the accident should have

---

[99] Anthony Tucker, "Unquenchable core of fear inside the poisoned furnace," in *The Guardian*, 30 April 1986, p. 23.

[100] In 1957, this accident caused the release of substantial amounts of radionuclides into the environment. The areas most affected by the fallout were the immediate surroundings of the Windscale plant which is a part of today's Sellafield site located on the coast of the Irish Sea right next to the Lake District of north-west England.

[101] Tucker, "Unquenchable core of fear inside the poisoned furnace."

[102] David Fairhall, "Chernobyl factors," in *The Guardian*, 30 April 1986, p. 23.

[103] The Guardian, "A disaster without frontiers," in *The Guardian*, 30 April 1986, p. 10.

[104] For example: Paul Keel and Martin Walker, "British evacuees fly home to health checks," in *The Guardian*, 1 May 1986, p. 1; Martin Walker and Edward Valliamy, "Airport radiation tests for students," in *The Guardian*, 2 May 1986, p. 1.

[105] For example: Michael White, Martin Walker, Alex Brummer, "US estimates up to 3,000 victims from satellite information," in *The Guardian*, 1 May 1986, p. 1.

an impact on the new build project Sizewell B,[106] a question the Labour Party was openly discordant about.[107] Although the issue of the possible health effects in the UK was further discussed, it did not garner a prominent role in the press. Regardless of the fact that the article by Medical Correspondent Andrew Vletch '*Parents scour chemists shops for iodine tablets*' clearly stated that there would be health effects in the UK, albeit very minor ones, it only made it to page 6 on 2 May. According to the author '*all it [the low-dose radiation from Chernobyl] will do is increase the incidence of cancer by an undetectable amount over the next 20 or 30 years.*'[108] Interestingly, however, this article quoted Joseph Rotblat, who said '*it would be nonsense to start taking iodine tablets. People are panicking because the reports of what has happened in Russia have been exaggerated.*' This 'all-clear' from the most well-known opponent to nuclear weapons, a man who had received the *Nobel Peace Prize* for his efforts to achieve a nuclear weapons test ban and nuclear disarmament and who had worked intensively on the health impact of nuclear fallout, was without a doubt a statement that was received within the circle of nuclear critics as being credible to the utmost. The front-page article published the very next day in *The Guardian* (3 May) corroborated this rather untroubled stance on radioactivity levels in Britain. Under the headline '*Radiation cloud reaches Britain*' the readers were informed that '*the radioactive cloud from the Soviet nuclear disaster reached Britain yesterday. But the National Radiological Protection Board [NRPB] described the contamination level as very low and the Department of Health said it posed no health risk to the public.*'[109] The article quoted Mr Donald Acheson, the Department of Health's Chief Medical Officer, who stated that '*there was absolutely no need to take potassium iodine tablets*' and that '*it was most unlikely that those returning home from affected areas were at risk.*'[110] Similar reporting continued on into the next day after: '*Radioactivity from the Chernobyl disaster was still being recorded all over Britain yesterday. Nationwide checks are being made on milk after traces were found in supplies. The National Radiological Protection Board emphasised that there was no danger.*'[111]

After heavy rainfalls and thunderstorms had occurred in some parts of the UK on 3, 4 and 5 May and had 'washed' the radionuclides to the ground, the NRPB slightly changed its evaluation and began advising that '*rainwater should not be drunk if it can be avoided.*'[112] However, this advise was not considered a major news event by *The Guardian* and rather than being given first page

[106] John Hooper, "Britain sticks to policy," in *The Guardian*, 1 May 1986, p. 8; The Guardian, "PM rejects Sizewell rethink call," in *The Guardian*, 30 April 1986, p. 5.
[107] Paul Brown, "Labour at odds over nuclear power," in *The Guardian*, 1 May 1986, p. 20.
[108] Andrew Vletch, "Parents scour chemists shops for iodine tablets," in *The Guardian*, 2 May 1986, p. 6.
[109] David Fairhall, Michael White, Mark Tran, "Radiation cloud reaches Britain," in *The Guardian*, 3 May 1986, p. 1.
[110] Ibid.
[111] Brown, "Labour at odds over nuclear power."
[112] Anthony Tucker, "Europe fears effects of high radiation," in *The Guardian*, 6 May 1986, p. 1.

coverage, it was located half a page down in an article that compared different counter measures taken all over Europe. Eventually, on 7 May, the issue of fallout self-affectedness gained momentum, as did the question of information policies: '*Radioactivity alarms Scotch makers,*'[113] '*Baker acts to soothe radioactivity fears,*'[114] '*MPs told: there is no health risk,*'[115] '*Levels dropping fast as cloud moves away,*'[116] '*Contaminated rain sets Welsh alarms ringing,*'[117] read the headlines. In order to deal with rising concerns and calm the people's anxiety a special incident room was set up so that people could call for advise on foodstuffs. The Chernobyl accident slowly transformed into a British political issue, not only because the opposition had begun to protest '*that there had been considerable confusion about the advice being offered by officials*'[118] but also because opinion polls showed a rapid increase in the people's opposition to nuclear new build projects.[119] Aside from an increase in public opposition to the government's nuclear policies, these polls also revealed that there was a '*crisis of credibility*': '*At least half the population, if the polls are right, does not accept that the new radioactivity is harmless*.'[120] Hugo Young, in his comment on 8 May, partly attributed this lack of trust[121] to the nuclear '*tradition from which his [Mr Baker, the Environment Secretary] own honesty cannot disconnect […] the folk-memory is filled more with lies than with truth: lies about the Windscale fire, evasions about numerous subsequent incidents, official documents spelling out a calculated policy of misinformation and subterfuge*.'[122] Young believed this mistrust went far beyond the specific case of Chernobyl and needed to be explained as a result of the general problematic issues connected to the British political system: '*If ministers are not trusted, it is because they personify a world which has always taken a minimalist approach to public information. This world, of Whitehall and Higher Westminster, sees the media as organs to be feared or manipulated but not respected: sees politicians themselves as sometimes a menace to good government: sees voters as people who, in their own best interest, need to know as little as possible about a crisis – and the bigger the crisis, the less they should know.*'[123]

---

113 Jean Stead, "Radioactivity alarms Scotch makers," in *The Guardian*, 7 May 1986, p. 2.
114 The Guardian, "Baker acts to soothe radioactivity fears," 7 May 1986, p. 6.
115 James Naughtie and David Rose, "MPs told: there is no health risk," in *The Guardian*, 7 May 1986, p. 1.
116 Anthony Tucker, "Levels dropping fast as cloud moves away," in *The Guardian*, 7 May 1986, p. 2.
117 Tony Heath, "Contaminated rain sets Welsh alarms ringing," in *The Guardian*, 7 May 1986, p. 2.
118 Naughtie/Rose, "MPs told: there is no health risk."
119 Ibid.
120 Hugo Young, "Crisis of credibility exposed by Chernobyl," in *The Guardian*, 8 May 1986, p. 21.
121 It is very interesting to observe that from the very beginning on, the issue of trust (trust in politicians, trust in public experts) and the question as to how trust in their evaluations could be (re-)gained took a central role in the Chernobyl debate. In this regard, the Chernobyl debate reflects Ute Frevert's considerations on trust as an *obsession of modernity*, a tendency in modern times to subsume progressively more relations under the discursive and emotional umbrella of trust and to consider trust in persons or entities as a major goal to achieve. Ute Frevert, *Vertrauensfragen. Eine Obsession der Moderne* (München: C.H. Beck, 2013).
122 Hugo Young, "Crisis of credibility exposed by Chernobyl."
123 Ibid.

The moment it was activated, people made extensive use of the government's information hotline.[124] The very fact that the hotline was soon overwhelmed with queries revealed a bigger problem at hand: whereas contingency plans and clear assignment of responsibilities had been established in the event of a nuclear accident on British soil, no such precautions had been taken with regard to the eventuality of a nuclear accident overseas.[125] However, even the adequacy of existing response measures for eventual accidents on British soil were now being called into question.[126] Press releases on 9 May that radiation levels in Scottish milk had indeed exceeded the safety levels and that it was still unsafe to drink rainwater did little to calm the growing anxiety.[127] The most obvious result of this confusion and anxiety of large portions of the British population were the approximately 800,000 phone calls made to various agencies in the search for information.[128]

France[129]

In France, late in the evening of 28 April, *France 3*, in its news show *Soir 3*, was the first TV channel to transmit the press release by TASS to the French audience.[130] In order to gain more information, the journalists contacted their correspondent in Moscow, who was only able to add some additional data regarding the nuclear plant to the original TASS press release but had no further information. The staff of the Swedish power plant Forsmark, since they were the first to have discovered the radioactive fallout from Chernobyl in Western Europe, was able to provide some more information. The first articles on the accident were published in the French newspapers on the morning of 29 April. For example, a section in the national daily social-democratic

[124] Richard Norton Taylor, "Chernobyl cloud jams Whitehall phones," in *The Guardian*, 8 May 1986, p. 2.

[125] This problem was addressed later through the *UK Response Plan*, which established the rules for dealing with the effects an overseas nuclear accident would have on the UK. In the UK Response Plan framework, the *Radioactive Incident Monitoring Network* (RIMNET) database was created. The plan was implemented in the 1990s as the national radiation monitoring and emergency response system. I am thankful to Ian Fairlie for providing me with information on RIMNET. For early proposals of the outline of the Response Plan, see: Department of the Environment (Her Majesty's inspectorate of pollution), *Nuclear accidents overseas: the national response plan and radioactive incident monitoring network (RIMNET). A statement of proposals* (London: HMSO, 1988).

[126] Paul Lashmer, Robin McKie, Geoffrey Lean, "Confusion in Britain," in *The Guardian*, 11 May 1986, p. 11.

[127] See: Jean Stead, "Scottish fallout four times critical levels," in *The Guardian*, 9 May 1986, p. 2.

[128] This number is given in Jennifer Brown, "The impact of television coverage on the United Kingdom public following the Chernobyl nuclear accident." In *Television and Nuclear Power. Making the Public Mind*, ed. by J.M. Wober (Norwood: Ablex Publishing Corporation, 1992), p. 196.

[129] The following pages on France are somewhat a revised synthesis of the corresponding paragraphs in Kalmbach, *Tschernobyl und Frankreich*. pp. 65. The account is based on my research in the press clipping collection of *Sciences Po Paris* and in the TV news report archived at the INA. For a compiled edition of selected French newspaper articles reporting on Chernobyl in 1986, see: Jérome Strazzulla and Jean-Claude Zerbib, *Tchernobyl – Les médias et l'événement* (Paris: La Documentation française, 1991).

[130] France 3, *Soir 3*, 28 April 1986, 10.25 p.m.

newspaper *Libération* informed its audience that, according to the news agency TASS, there had been an accident at the Chernobyl plant that had caused victims and that abnormally high levels of radioactivity had been measured in Scandinavia. With regard to the situation in France, the article went on to state that there was no cause for alarm, as the measurements taken thus far had not shown any abnormalities.[131] A similar 'all clear' was given in the conservative *Le Figaro* and the far-left *l'Humanité* newspapers, revealing that initial reporting on Chernobyl was independent of the political orientation of the newspapers. In this regard, *Le Figaro* informed its audience on 30 April, that another radioactive mass of air was approaching Poland and Germany but that, according to the *Service centrale de protection contre les rayonnements ionisants* (SCPRI), no radioactivity had yet been measured in France.[132] The same day, *l'Humanité* declared, quoting the *Commissariat à l'énergie atomique* (CEA), every care had been taken to ensure that no similar accident could happen in a French nuclear reactor.[133] Thus, the alienation of the problem, through reassurances to the French public that the 'nuclear cloud' had not yet touched their country and that the French plants were safe, was an intrinsic element of the first French news reports. Interestingly, in this regard, the articles printed in the *Quotidien de Paris* shifted perspective from one day to the next: On 29 April the newspaper mentioned a slight design similarity in some of the USSR reactors with the Western PWRs.[134] The following day, however, it back-pedalled emphasizing that the Soviet nuclear fleet had nothing in common with Western plants. It then added that the USSR, in general, was incapable of preventing and controlling such accidents.[135] French journalists often made connections between these kinds of statements and national nuclear policies. For example, the article in *Quotidien de Paris* that day stated that it was ridiculous to call into question the nuclear programme as such just because of this '*set-back in progress*.'[136] Because of the national holiday on 1 May, no newspapers were published. But on 2 May, the reporting continued as it had begun and

---

131 Vincent Tardieu, "Catastrophe dans une centrale nucléaire soviétique," in *Libération*, 29 April 1986: *'L'accident survenu à la centrale de Tchernobyl en Ukraine, au nord de Kiev, a selon l'Agence Tass, causé des victimes. Des taux de radio-activité anormalement élevés ont été mesurés hier dans tous les pays scandinaves […] En France, on apprenait que plusieurs relevés ont été effectués hier soir en région parisienne, sans réléver la moindre anormalité'*.

132 Jean-Paul Croizé, "Le syndrome ukrainien," in *Le Figaro*, 30 April 1986: '*Un nouveau flux pollué se dirige vers la Pologne et l'Allemagne, mais semble pour l'instant devoir éviter notre pays où, selon le Service centrale de protection contre les rayonnements ionisants (SCPRI) aucune augmentation de la radioactivité n'a été décelée hier*.'

133 Gérard Streiff, "Le syndrome de Tchernobyl," in *l'Humanité*, 30 April 1986: '*Le Commissariat à l'énergie atomique (CEA) a indiqué hier que toutes les précautions avaient été prises pour éviter que ne se produise en France un accident semblable.'*

134 Quotidien de Paris, "Catastrophe nucléaire en URSS," 29 April 1986: '*Le parc de centrales nucléaires compte des centrales à eau bouillante, d'un type voisin de celles de la société américaine General Electric, à eau pressurisée, un peu semblable à celles de Westinghouse et des centrales françaises actuellement en service*.'

135 Dominique Jamet, "Le S.O.S de l'URSS," in *Quotidien de Paris*, 30 April 1986: '*l'URSS [...] ne maîtrise pas la filière graphite-eau bouillante, abandonnée partout ailleurs, et, inapte à prévenir de tels accidents, elle est également incapable d'en contrôler les suites*.'

136 Ibid.: *'Il serait ridicule, en fonction de cette ,retombée' du progrès, la première de cette ampleur après quarante ans, de jeter l'anathème sur une technologie qui a fait et continue tous les jours de faire ses preuves.'*

the French public was assured once more that Chernobyl posed no threat to the country. *Le Matin* declared '*there is zero threat*': thanks to the current meteorological conditions, France was being protected from the Chernobyl fallout.[137] The newspapers also reported on the 'overreactions' of other countries, as did the *Libération* in its article on the iodine intoxications of children in Poland caused by the panicked reaction of their parents.[138] French parents were warned not to follow this example: for there was no need for any counter measures to be taken.[139] In general, journalists placed the chaotic reactions in other countries, especially in West Germany, in contrast to how the situation was being calmly and professionally handled in France. In so doing, they were relying on the evaluations and statements of the official experts they had consulted with regard to this nuclear emergency: the SCPRI, the CEA, and the national meteorological service.

2.1.1 Public authorities

France

Representation in early media reporting

In France in 1986, the main institutions concerned with radiation[140] protection and nuclear safety were the SCPRI and the *Institut de protection et de sûreté nucléaire* (IPSN).[141] In this field, these two institutions provided the official expertise. In late April 1986, the government as well as French journalists turned to these institutions for an informed evaluation of the risks the Chernobyl fallout posed. Therefore, their statements figured prominently in the newspapers and their representatives were invited to speak on talk shows and TV interviews. The SCPRI was responsible for measuring, observing and evaluating radioactivity levels and their impact on the French people. In terms of organizational structures, the SCPRI reported to the Ministry of Health. The aim for which it was

---

137 Robert Clarke, "Le Matin répond aux 10 questions que vous vous posez," in *Le Matin*, 2 May 1986: *'La menace est nulle. Si les observatoires spécialisés relèvent une radioactivité, cette dernière est très loin des seuils dangereux. [...] La Météorologie nationale prévoit que l'anticyclone, cette zone de hautes pressions qui règne actuellement sur la France, nous protège de toute arrivée d'un nuage radioactif.'*

138 See: Pierre Vodnik, "Le syndrome du nuage panique les Polonais," in *Libération*, 2 May 1986.

139 See for example: Libération, "L'Europe dans le nuage," 3 and 4 May 1986: *'Aucune ,contre-mesure sanitaire' n'est justifiée, et les prises préventives d'iode ne sont, ni justifiées, ni opportunes' a déclaré le professeur Pierre Pellerin, directeur du SCPRI.'*

140 In this book, the term *radiation* always means *ionizing radiation*. The terms *radiation protection* and *radiological protection* are used synonymously.

141 The different institutions and responsibilities within the French radiation protection and safety sector can be only outlined here. I have concentrated on the SCPRI and the IPSN inasmuch as they are the two central actors in this field in relation to the French Chernobyl debate. For a detailed description of this sector between 1986 and 2006, see: Philippe Renaud, Didier Champion, Jean Brenot, *Les retombées radioactives de l'accident de Tchernobyl sur le territoire français. Conséquences environnementales et expositions des personnes* (Paris: Éditions Tec & Doc, 2007), pp. 175.

founded in 1956 was to create an agency responsible for radiation protection that was situated outside of the CEA, the French national agency for nuclear research and development for civil and military applications.[142] Over the years, as the SCPRI expanded it was accorded more and more responsibilities. Therefore, by 1986, it was the national authority in charge of radiation protection. By this time it maintained a network of monitoring stations in order to keep track of radiation levels in the air.

The French public became familiar with Pierre Pellerin, the founder and long-term director of the SCPRI, through his public statements on the impact of Chernobyl in the spring of 1986. From there on in, his name was closely linked to the *affaire Tchernobyl*,[143] and very negatively, from the point of view of French anti-nuclear activists. Given the close links with its founder, Pellerin's involvement in the *affaire Tchernobyl* may have been one of the main reasons why, after his retirement, the activities of the SCPRI were terminated (in 1994) and its responsibilities were taken over by the newly instituted *Office de protection contre les rayonnements ionisants* (OPRI).

Alongside the SCPRI, the other main French institution in 1986 that was in the field of radiation protection and nuclear safety was the IPSN. Founded as a sub-division of the CEA, the IPSN was primarily in charge of *protection et sûreté nucléaire* (nuclear protection and safety) in the CEA, but it also conducted research and provided expertise in this field in general. The close connection between the CEA, the principal institution in the French nuclear sector, and the IPSN was the source of much criticism that there was a lack of independent control in the nuclear sector. Therefore, in 2002, a reform was undertaken and the French radiation protection and nuclear safety institutions were restructured. The result was that the OPRI and the IPSN were merged into a single federal agency independent from the CEA: the *Institut de radioprotection et de sûreté nucléaire* (IRSN).[144]

Back in 1986, however, Pierre Pellerin and his SCPRI were the central source of information regarding the intensity of radioactive fallout from Chernobyl in France. The SCPRI published a series of *commuiqués* which were in part reprinted in the newspapers. Members of the French government, like the Minister of Environment, Alain Carignon, also based their public statements

---

[142] On the history of the SCPRI see: SCPRI, *Organisation pratique de la radioprotection en France dans le cas de la santé publique et du travail*. Rapport SCPRI no 75 (août 1962).

[143] When Pierre Pellerin died in March 2013, *Le Figaro* published an obituary with the title: 'Tchernobyl: mort du Professeur Pierre Pellerin', http://www.lefigaro.fr/actualite-france/2013/03/03/01016-20130303ARTFIG00110-tchernobyl-mort-du-professeur-pierre-pellerin.php?m_i=oNnoRG4G7Ei_JD_rxn_QBtIOh5HZNZ5_7xL7rLMwcZo37bwUE (last accessed: 15 June 2013).

[144] I will only provide here a rough outline of how these institutions were restructured and will not elaborate further on other institutions than the OPRI and the IPSN, such as the DSIN and the DGSNR. For a complete account on the creation of the IRSN and the other institutions involved, see: Ministère de l'Économie, des Finances et de l'Industrie, *Une pièce essentielle dans l'organisation de la sûreté nucléaire et de la radioprotection: le nouvel IRSN*. Extrait du rapport annuel 2001 de la DGEMP, Paris 2002.

on the evaluation of this state agency. But the SCPRI did not communicate to the French public exclusively through its *communiqués*. It sent its representatives to give interviews to newspapers and on the TV. This direct communication is what is of particular interest here. On the one hand, the choice to concentrate on this form of communication was informed by how the official nuclear experts had behaved in their public appearances, which played a decisive role in the triggering and shaping of the *affaire Tchernobyl*. On the other hand, the history of the *communiqués* is a history in and of itself given that, over the course of the *affaire Tchernobyl*, many French journalists claimed Pellerin and the SCPRI had intentionally withheld the true figures regarding the fallout and had not communicated all their data and insights to the media, an accusation the SCPRI and Pellerin rigorously refuted.[145]

The first point at which the SCPRI began to give public interventions was when Pierre Pellerin came on TV for an interview with channel *TF1* at noon on 29 April. When asked how he had evaluated the situation in Sweden regarding the public health risks, Pellerin responded: '*I had information this morning directly from the Scandinavian [radiation protection] services that work with us within the framework of the international centre I am directing. These are very thorough people, and they tell us exactly this: yesterday, the iodine-131 reached 10 Becquerel per cubic meter of air and this morning it went down to below 2,5 Becquerel per cubic of meter air. This is a radioactivity that is noticeable, that is mensurable, but it does not represent any inconvenience with regard to public health. There has been so much doom mongering with regard to nuclear that one risks unleashing panic. I would like to say it here, clearly, that even for the Scandinavians, there is absolutely no menace to health. It is a phenomenon that we are all observing, all the competent people in this field in Europe and in the world, a phenomenon which is very interesting to observe because of the lessons we will learn regarding the movements of air masses, masses of air ra..., of eventually radioactive air resulting from an accident, but that does not threaten anybody at the moment, except perhaps in the immediate neighbourhood of the plant and, furthermore, it is foremost in the plant that the Russians admitted there were people who had been injured*.'[146]

[145] For a partial analysis of the SCPRI's communiqués, see: Sezin Topçu, *L'agir contestataire à l'épreuve de l'atome*, pp. 196. However, in order to definitely answer the question of who had access to which numbers at what time a full comparison of the archives of the SCPRI and the archives of different newspapers and TV channels would need to be carried out. This important aspect of the *affaire Tchernobyl* still represents a lacuna in French media history that merits further research.

[146] TF1, Interview with Pierre Pellerin, in *13 h*, 29 April 1986. Transcription and translation from the original recording held by the INA by the author: '*J'ai eu ce matin des informations directement des services scandinaves avec lesquels nous travaillons dans le cadre du centre international que je dirige, et ce sont des gens très solides, qui nous disent exactement ceci: hier on est arrivé en iode 131 à 10 Becquerel par mètre cube d'air et maintenant, c'est redescendu à moins de 2,5 Becquerel par mètre cube ce matin. Il s'agit d'une radioactivité qui est notable, qui est mesurable mais qui ne présente aucun inconvénient sur le plan de la santé publique. On a fait tellement de catastrophisme sur le plan du nucléaire qu'on risque de déclencher des paniques. Je voudrais bien dire ici, clairement, que même pour les Scandinaves, la santé n'est absolument pas menacée. C'est un phénomène que nous suivons tous, toutes les personnes compétentes dans ce domaine sur le plan européen et mondial d'ailleurs, et qui*

Pellerin's interview was characterized by his cold, arrogant behaviour towards his interviewer, who presented Pellerin as an ivory tower scientist, interrupting his speech with a call for: '*En clair, en clair, en clair!*' ('In plain language!'); an interruption to which Pellerin did not pay any attention whatsoever.

But the SCPRI did not comment only on aspects of radiological protection. In addition, it provided evaluations on nuclear safety issues. For example in an interview published in *Le Parisien* on 30 April a representative of the SCPRI stated that '*a major accident like the one in Chernobyl just cannot take place in France because of the difference in design that exists between the plant concerned and the type of plants which we build. […] Our quality, safety and maintenance controls are a lot more rigorous than those in the USSR*.'[147]

The IPSN provided statements on Chernobyl in the early days of the accident, as well, and its representatives were present in the media, too. Like the statements released by SCPRI, those of the IPSN provided evaluations of both nuclear safety and radiological protection. In this regard, on 29 April, IPSN's director François Cogné gave an interview on channel *Antenne 2*. When asked if something similar could happen in France, Cogné answered: '*With regard to secrecy, I don't believe so. The electric power plants are totally controlled by the public and open to all controls*.' And in response to the interviewer's questions of whether '*there is a risk these winds will reach France*', he stated: '*Measurements have been taken […] these measurements are completely negative and there isn't any reason, just in terms of the meteorological conditions, that whatever it may be would be measured in France*.'[148] Cogné even provided a statement on the Chernobyl death toll – at a moment in time, when there was almost no information available on the details and evolution of the accident. Nevertheless, Cogné declared: '*the only deaths are probabilistic deaths. […] At this moment, the only consequences are probably consequences for the workers in the plant itself and not for the neighbouring inhabitants*.'[149]

An analysis of these early public statements on Chernobyl made by French official experts

---

est très intéressant à suivre pour les enseignements qu'on en tirera sur le plan des mouvements d'air, des masses de ra... d'air, éventuellement radioactif, provenant d'un accident, mais ça ne menace personne actuellement, sauf peut-être dans le voisinage immédiat de l'usine et encore c'est surtout dans l'usine que je pense que les Russes ont admis qu'il y avait des personnes lésées.'

147 Le Parisien, "Le nucléaire en France: la sécurité avant tout," 30 April 1986, translation by the author: '*Un accident majeur comme celui de Tchernobyl ne peut pas se produire en France en raison de la différence de conception qui existe entre la centrale en cause et les types de centrale que nous construisons. [...] Les contrôles de qualité de la sûreté et de la maintenance sont beaucoup plus rigoureux qu'en U.R.S.S.*'

148 A2, Interview with François Cogné, in *MIDI 2*, 29 April 1986. Transcription and translation from the original recording held by the INA by the author: *'Sur le plan du secret, je ne crois pas. Les installations produisant de l'électricité sont totalement contrôlées sur le plan public et sont ouvertes à tous les contrôles. […] Des mesures ont été faites [...] ces mesures sont tout à fait négatives et il n'y a de fait aucune raison, de par les conditions météorologiques elles-mêmes, que quoi que ce soit, soit mesuré en France'.*

149 Ibid.: '*Les seuls morts sont des morts probabilistes. [...] Actuellement, les seuls conséquences sont probablement des conséquences pour les travailleurs de la centrale elle-même et non pas pour les populations avoisinantes.*'

reveals that the categories of comparison central to this study – self-affectedness, radiophobia and apocalypse, anti-Eastern European/anti-Soviet stereotypes – all figured prominently in their narratives. With regard to the aspect of self-affectedness, the representatives of SCPRI and IPSN emphasized that there would be no fallout of any proportion that could pose a threat to French public health. Furthermore, they emphasized that the Chernobyl plant had nothing in common with French nuclear power plants and that, additionally, safety and security standards were superior to the practices applied in the USSR. These were the two points upon which they based their reassurances that there was no reason to worry that a similar accident could occur in a French plant.[150] Within the framework of self-affectedness, this strategy of alienation aimed to prevent the French public from transferring the Chernobyl scenario over to the French nuclear fleet. This element was underpinned with and reinforced by references to anti-Soviet stereotypes, which heavily relied on the images of Western (technical) superiority and Eastern unsoundness. These evaluations of Chernobyl by the public experts also included statements on the situation in the vicinity of the plant. Speculations of a death toll of 2,000 people that had circulated in the US media reporting were strongly dismissed by French public experts. French state officials were convinced that a bigger risk lay in the panic induced overreactions fuelled by nuclear fears than in the fallout itself. In this regard, their narratives were clearly situated in the argumentative field of 'radiophobia', the intent of which were to oppose the narratives that described the situation as an 'apocalypse'.

Britain

Representation in early media reporting

In Britain, as well, statements by official radiation protection and nuclear safety experts formed an essential part of early media reporting on Chernobyl. The *National Radiological Protection Board* (NRPB) – basically the British counterpart to the SCPRI in 1986 – was the main source of information about radioactivity levels in Britain.[151] And, like their French colleagues, the British public experts initially saw no reason to worry about potential radioactive fallout from Chernobyl in

[150] In addition to the discursive strategy of alienation which was applied in the case of Chernobyl by arguing that it was Soviet plant design and security standards that made this accident possible, the statements by Western public authorities after Chernobyl also reflect a strategy of coping with uncertainties and risk that Wolfgang Bonß has theorized, namely the discursive strategy to characterize a factual falsification as 'exception' or 'anomaly', Bonß, *Vom Risiko*, p. 92: '*Sofern Erwartungssicherheiten normativen Charakter haben, sind sie auf der anderen Seite aber auch in erheblichen Maße enttäuschungsfest. Denn ebenso wie Normen bei ihrer Verletzung nicht abgeschafft werden, sondern Sanktionen nach sich ziehen, werden Erwartungssicherheiten keineswegs bei jeder empirischen Erschütterung außer Kraft gesetzt. Faktische Wiederlegungen werden vielmehr zunächst nach Möglichkeit bagatellisiert oder als „Ausnahme" oder „Anomalie" interpretiert*.'

[151] The NRPB was instituted in 1970 and existed until 2005 when it became part of the newly founded *Health Protection Agency* (HPA). For a history of the NRPB, see: Mike O'Riordan, *Radiation protection: a memoir of the National Radiological Protection Board* (Didcot: Health Protection Agency, 2007).

their own country. On 29 April, people could read in *The Guardian*: *'Britain has no need to fear the radiation, the Protection Board said. The fall-out reaching Scandinavia was only twice the natural background level of radiation. This was so low that it should not cause any harm if it was ever carried to Britain. There was no need for any special precaution to be taken in this country. […] Close to the plant the radiation doses may be lethally high but the amount of radioactivity so far detected in the west presents no immediate hazard especially as the isotopes are apparently of a kind which does not accumulate in bone or other tissues.*'[152] A couple of days later, this narrative had still not changed. An article in *The Guardian* on 3 May quoted a representative of the official radiation protection institute: '*since the NRPB has already checked nearly 100 people from places known to be affected by the accident – that is Minsk and Kiev – it is clear that people in Britain will not be placed at risk by the cloud*.'[153]

The British government also gave an 'all clear' very early on. In an article of 30 April, *The Guardian* reported on the debate held in the *House of Commons* the previous day during which '*MPs were assured by both the Prime Minister and the Environment Secretary, Mr Kenneth Baker'* that '*Britain has escaped the effects of the nuclear plant disaster in the Soviet Union*.'[154] However, the article also included critical voices that were raised in this debate, namely Mr. Tony Benn, a Labour MP of Chesterfield, who was calling for a nuclear power phase out and a full debate on nuclear power in Britain. Tony Benn specifically placed the Chernobyl event in relation to the nuclear policies regarding the ongoing new build project: '*He demanded that the Government give a full report on the Chernobyl incident before any authority was given to proceed with a pressurised water reactor at Sizewell*.'[155] But the Thatcher government saw no reason why the Chernobyl accident ought to influence British nuclear policies. As the Prime Minister declared herself, '*the reactor in the USSR is totally different from that planned at Sizewell. The record of safety and design, operation maintenance and inspection in this country is second to none. I hope, therefore, you will think it right to support the furtherance of such an excellent nuclear industry.*'[156] Margaret Thatcher was certainly not alone in emphasizing the differences between the Soviet reactor design and British plants: '*The energy secretary, Mr Peter Walker said during a visit to the Sellafield reprocessing plant that the Chernobyl disaster could not happen in Britain because there was no reactor comparable to the Soviet one anywhere in the western world*.'[157] However, this narrative was strongly attacked by *Greenpeace* and *Friends of the Earth*: According to them, the question was not

[152] Fairhall, "Radioactive Russian dust cloud escapes."
[153] Fairhall/White/Tran, "Radiation cloud reaches Britain."
[154] Alain Travis, "No radiation threat to the UK, Commons told," in *The Guardian*, 30 April 1986, p. 4.
[155] Ibid.
[156] The Guardian, "PM rejects Sizewell rethink call."
[157] Peter Murtagh, "Soviet reactor 'saver than British AGR'," in *The Guardian*, 8 May 1986, p. 2.

whether or not the same thing could happen in the UK. Rather the question was whether the consequences of an accident in the UK would be even more immediate given that '*British reactors were not totally contained with a protective shell whereas the Chernobyl reactor had been*.'[158]

Nevertheless, the government did not consider design issues to be the major obstacle to the furtherance of its nuclear policies. The greatest obstacle lay in people's exaggerated perception of the risks connected with this technology. This risk perception was, however, in the opinion of Energy Secretary Mr Peter Walker not specific to nuclear power but inherent to *'anything that is tolerable new and innovative. If I tried to introduce gas for the first time now, there'd be no possibility of having explosive gas going down every street and into every house.*' In order to overcome this fear of nuclear power, he suggested following the good example of France. An article in *The Guardian* quoted his reasoning: *'Instead of looking at the disaster in the Soviet Union where the design concerned had in any case raised widespread concern among experts, Britain should be taking its cue from France, where there was virtually no controversy about nuclear power. This, Mr Walker said, was because electricity was 20 per cent cheaper there – a direct consequence of the intensive use of atomic energy. He pointed out that 60 per cent of France's nuclear capacity was accounted for by Pressurised Water Reactors (PWRs) of the type which the CEGB wants to build at Sizewell. […][For Walker] there is no doubt that the only form of energy that is likely to give enough energy at tolerable costs and safety is nuclear*.'[159]

Asides from the individual members of government, journalists turned to one person in particular in order to acquire information on the impact Chernobyl would have on Britain: John Dunster, the Director of the NRPB. When Dunster died in 2006, the obituary published by the *Health Protection Agency* (HPA) – which the NRPB had by then become part of – did not forget to mention the role Dunster had played in the direct aftermath of Chernobyl: '*John Dunster will also be remembered for the response of NRPB to the Chernobyl accident in 1986. The plume from Chernobyl arrived in the UK on Friday, 2 May, just before a bank holiday weekend. John Dunster led the NRPB response to the accident throughout that weekend and appeared on all the major television and radio networks to explain what the impact was likely to be in the UK. He understood the need for clear communications and drove forward efforts to get sensible advice on Ceefax and Teletext. There was understandable public concern at the time and John Dunster argued strongly that providing accurate public information about possible risks should be a priority.*'[160] However, in

[158] Ibid. The question surrounding the definition of 'containment' was not unique to the British debate. It was also discussed at the international level, particularly within the IAEA.
[159] Hooper, "Britain sticks to policy."
[160] Michael Clark, "John Dunster CB ARCS BSc FSRP(1922-2006)," http://www.hpa.org.uk/Publications/Radiation/MiscellaneousRadiationPublications/rad20misc_pub_DunsterObituary/ (last accessed: 15 June 2013).

1986, there were also some who critically viewed his public appearances. They were suspicious of Dunster because of his role in waste dumping at Windscale and in the evaluation of the Windscale Fire.[161] An article in *The Guardian* on 7 May 1986 phrased this reservation as follows: '*During the past few days, Dr John Dunster, director of the National Radiological Protection Board, has done sterling work in calming public fears. Keep taking the milk but cut down on the rain water, his latest reassuring message goes. Only "a few tens" would die. This is the same Dr Dunster who reported in 1958 on a two-year ongoing experiment to increase radioactive waste discharges from Windscale deliberately in order to find out where the waste was going. […] Four of the young leukaemia victims in the neighbouring village of Seascale, listed in the Black Report, were born in 1957 – also the year of the plant's fire. Dr Dunster subsequently replied that the discharges were properly authorised and within safety limits. In 1984 he urged a hunt for the "missing factor" other than radiation that must be responsible for leukaemia cases in the area.*'[162] Whatever this missing factor may be or if indeed it exists at all, John Dunster's prediction regarding the impact Chernobyl would have on Britain proved to be wrong. In an article in *The Guardian* of 7 May he was quoted as saying: '*But if the cloud does not come back the whole thing will be over in a week or 10 days*.'[163] This was definitely not the case, as the restrictions on sheep farms implemented over that summer would so clearly show.

Comparing the early statements of French state officials with their British counter-parts, it is first and foremost important to stress that representatives of the British institutions in charge of radiological protection and nuclear safety provided very similar statements to those pronounced by their French colleagues. Both dismissed any kind of self-affectedness and proclaimed that the radioactive fallout from Chernobyl would not lead to worrisome consequences in the country itself nor was the event in the USSR cause to call into question the country's own nuclear programme. In addition, the experts of both countries who intervened did not figure in the media reporting as anonymous members of a public agency but were personalized, namely Pierre Pellerin and François Cogné in the French case and John Dunster in the British case.

Early reports

[161] The obituary published by the ICRP mentioned this important period of Dunster's professional life, as well. However, it might be questioned whether the metaphor 'baptism of fire' used in the obituary is suitable in relation to the Windscale Fire: '*ICRP regrets to announce that our emeritus member, Herbert John Dunster, passed away on Sunday 23 April 2006 at an age of close to 84 years. John, who spent almost all of his professional life in radiological protection, had his baptism of fire in the Windscale accident in October 1957. […]*', http://www.icrp.org/page.asp?id=101 (last accessed: 15 November 2013).

[162] Stuart Wavell and Stephen Cook, "Case of missing isotope," in *The Guardian*, 7 May 1986, p. 32.

[163] Naughtie/Rose, "MPs told: there is no health risk."

While the immediate reactions to the Chernobyl accident in late April and early May are crucial for understanding the tenor of the official response, to consider only this time frame would be reductive insofar as it is far too brief to properly reflect how the early narratives and interpretations developed and were communicated by the public authorities. By widening the perspective it is possible to take into consideration the statements that the actors initially transmitted in their newspaper and TV interviews and also to refer to statements that the actors published themselves once they had received more detailed information, either through their own means or through the evaluations that had been communicated at the international level, primarily through the IAEA.

NRPB

In a conference organized by the *British Nuclear Energy Society* in October 1986 (the proceedings were published in 1987 as a book),[164] representatives of the NRPB presented their evaluation of the accident. Their statements offer interesting insights into the NRPB's evaluation of the health impact of Chernobyl. Regarding the '*Radiological consequences in the USSR*', M.D. Hill of the NRPB stated in his paper that there had been 31 deaths, adding that '*no one from the off-site area had to be taken to hospital for treatment of radiation injuries*.'[165] Here, like many others, he drew upon the information provided by the report that had been presented to the IAEA by the USSR delegates in the Chernobyl conference in Vienna in 1986. However, Hill went on to criticize this very same Soviet evaluation with regard to a different aspect of the accident, namely the consequences connected to the collective dose received by the evacuated population. He was convinced the Soviet estimation was an exaggeration and wrote that '*more realistic assumptions could produce an estimate which is a factor of 10 lower*.'[166] Therefore, his statement that '*fatal cancers expected to occur in the 135,000 evacuees as a result of the external irradiation would be about 200,*'[167] ranks among the lowest estimates of the expected death toll that can be found in the Chernobyl debate. With regard to the wider population, the NRPB estimated a low health impact of the Chernobyl fallout, as well. Hill's NRPB colleague, J.R. Simmonds, wrote in his paper that, based on the NRPB's own assessment of the radiation dose received in Eastern European countries, '*in all cases the doses are lower than those received annually from natural background radiation.*'[168] This

[164] British Nuclear Energy Society, *Chernobyl: a technical appraisal. Proceedings of the seminar organized by the British Nuclear Energy Society held in London on 3 October 1986* (London: Telford for the British Nuclear Energy Society, 1987).
[165] Ibid., p. 64.
[166] Ibid., p. 67.
[167] Ibid.
[168] Ibid., p. 77.

evaluation of the situation in Eastern Europe is indeed far from any apocalyptic scenario. Interestingly, the consequences of the fallout in Britain itself were not included in any of the papers presented by the NRPB representatives. However, this topic was raised in the final discussion, and in the proceedings of this discussion John Dunster was quoted having said: '*I do not know what the results in lamb show at the moment, and I have no idea for how long the restriction is going to persist, but probably not much longer*.'[169] The fact that the Director of the NRPB was not up to date on the levels of radioactivity in sheep at this peculiar moment in time is quite remarkable.

Only a few short months after this conference, in January 1987, the NRPB submitted its '*Preliminary assessment of the radiological impact of the Chernobyl reactor accident on the population of the European Union*'[170] to the Commission of the European Communities, a report the NRPB had been commissioned to carry out. '*The aim of the study was to review information on the environmental contamination measured in member states of the EC; to make a preliminary assessment of individual and population doses for each country; to make an estimate of the resulting health impact and to indicate the effects of the various countermeasures*.'[171] In the general description of the accident, the authors stated that '*a series of human errors, whereby safety systems were deliberately switched off and operating rules were ignored, brought the reactor into unstable condition*.'[172] With regard to the health impact, the NRPB calculated that '*the expected number of additional thyroid cancers occurring within EC countries due to Chernobyl is estimated to be some two thousand, of which about 5% are expected to result in fatality. The number of additional fatalities from cancer of all types due to Chernobyl is expected to be in the region of thousand. These extra cancers are predicted to occur spread out in time over a few decades following the accident. These estimates need to be seen against the background of cancers that would occur in the population even if the Chernobyl release had not happened. Over the next fifty years about thirty million people in the EC countries are expected to die from cancer of one type or another*.'[173] Therefore, NRPB reached the conclusion that '*it will be impossible to detect the health impact of the accident*.'[174] When this statement is reframed using the analytical categories of this research, it asserts that the grounds for perceptions of self-affectedness in Western Europe did not exist.

---

169 Ibid., p. 86.
170 NRPB, *A preliminary assessment of the radiological impact of the Chernobyl reactor accident on the population of the European Union*, January 1987. The authors of the report were: M. Morrey, J. Brown, J.A. Williams, M.J. Crick, J.R. Simmonds, M.D. Hill.
171 Ibid., abstract.
172 Ibid., chapter 2.
173 Ibid., p. 23.
174 Ibid., p. 26.

AEA

The brochure circulated by the *United Kingdom Atomic Energy Authority* (UKAEA, or more commonly AEA) is another example of early Chernobyl reports published by British public authorities. In some regards, the AEA filled a similar role in the early British nuclear history as the CEA in France. It was founded in 1954 as the principal authority of the British nuclear programme, for its military and civil divisions alike. It coordinated the research programmes and operated the sites. Soon after its foundation, however, parts of its activities were outsourced and new institutions were founded. This led, for example, in 1971 to the formation of the NRPB – as aforementioned UK's central radiation protection agency – and *British Nuclear Fuels Limited* (BNFL), a private sector company that from then on was responsible for fuel production, including the operation of the Windscale site. As a result, the AEA's field of activity shifted to that of decommissioning the old Magnox plants and to nuclear fusion research, its main area of operation today. Although in 1986 it was no longer the central actor that it had been at the time of its establishment, the AEA continued to play an important role within the British nuclear sector and was considered the leading authority in nuclear research. As such, it published a brochure in 1987 on '*The Chernobyl accident and its consequences*'.[175] Lord (Walter) Marshall of Goring, chairman of the *Central Electricity Generating Board* (CEGB) wrote the foreword.[176] In the 1980s, Lord Marshall was one of the key figures of the British nuclear energy sector. In 1981 he was appointed chairman of the AEA, was knighted the following year and the year after moved over to the CEGB. His enthusiasm for nuclear energy generation was highly appreciated by the British government, namely Margaret Thatcher. For '*the British anti-nuclear movement [however] he occupied the top slot in their demonological lexicon for a decade and a half, as he advocated the virtues of pressurised water reactors and a major construction programme of nuclear power plants in Britain.*'[177] His role in the aftermath of Chernobyl was so important that even when he died ten years later, his obituary in *The Independent* stated that Marshall of Goring had '*bent all his powers of communication to explaining to professional and lay audiences what had gone wrong and what the essential differences were between the Russian and Western concepts of nuclear safety management.*'[178] This commitment clearly came across also in his foreword of the AEA brochure, where he stressed that the British nuclear sector had to give '*as much information as possible to the British public in a language*

[175] John Gittus et al., *The Chernobyl accident and its consequences* (London: United Kingdom Atomic Energy Authority, 1987).

[176] Further consideration of the CEGB and its role in the early Chernobyl debate is given in the following sub-chapter 2.1.2.

[177] Johan Baker, "Obituary: Lord Marshall of Goring," in *The Independent*, 26 February 1996.

[178] Ibid.

which is both correct and understandable'[179] in order to convince the people of the trustworthiness of the national nuclear operators.[180]

The different sections of the AEA booklet covered a wide range of topics, including the USSR power reactor programme, the evolution of the accident, the Chernobyl source term, and its consequences for the environment. The information given was primarily based on the USSR report to the IAEA conference in August 1986, and the authors of the brochure included in their reasoning that, based on this evaluation, such an accident could simply never occur in the UK. The section that treated the environmental consequences of Chernobyl was the shortest section of all. Therein the AEA delimited the area of the health impact of Chernobyl exclusively to Eastern Europe and even presented a precise number: '*7,500 fatal cancers in the European part of the USSR [have to be expected] as a result of the accident.*'[181] This number was then statistically compared to other health risks. More specifically, the AEA chose one case in particular for the comparison, one that I will refer to henceforth as the *smoking-topos*. The smoking-topos, i.e. the comparison between the yearly death toll from smoking and the Chernobyl death toll, was used to call attention to how minor the health impact of the accident really was. The smoking-topos, however, was not presented as a death toll in the AEA brochure but as a proportion. The number of 7,500 fatal cancers attributed to the Chernobyl accident was declared to be '*equivalent to the compulsory smoking of less than 3 / 10,000 of a cigarette per week for 30 years.*'[182] Understanding the underlying argument behind this comparison is particularly useful as it sheds light on the way in which the AEA approached the problem of Chernobyl induced health effects. The authors of the brochure had summed up the health effects that would occur if were each individual inhabitant of the European part of the USSR to smoke the tiny amount of 3/10,000 of a cigarette every week for 30 years. The total sum of all these minute statistical health effects was 7,500 – i.e. the number of cancers that was statistically calculated to appear in Eastern Europe in consequence to the Chernobyl fallout, as well.[183] Right

[179] John Gittus et al., *The Chernobyl accident and its consequences*, p. 3.

[180] This claim clearly reflects what is referred to in STS terms as the strategy of 'educating the public'. According to this strategy, the public is considered to be contesting a certain technology because of a lack of information or false information. The provision of more or better information to the public on this technology is considered to be the way to overcome their opposition. This strategy implies that there is a presumption of knowledge hierarchies between experts and the uninformed public and considers knowledge to be something that is produced in a certain circle of experts and then needs to be passed on to laypersons in a top-down-scheme.

[181] John Gittus et al., *The Chernobyl accident and its consequences*, p. 7.11.

[182] Ibid., p. 7.12.

[183] There haven been numerous criticisms raised against these kinds of comparison. The first is that smoking is an active decision that one can chose to refrain from, while there is no choice with regard to inhaling air containing radioactive iodine. (A letter to the editor published in *The Guardian* on 9 May 1986 summed up this criticism in a humorously sarcastic way: '*I have successfully given up smoking and am now trying desperately to give up nuclear power.*'). In addition to questions of unequal agency, it is also criticized that these kinds of statistical comparisons create unrealistic scenarios to call attention away from individual problematic cases: It is extremely unlikely, if not impossible, that a person would smokes 3/10,000 of a cigarette. Rather, the individual would smoke an entire cigarette on a daily basis, and probably even more than one. Therefore, this person would run a higher risk of

from the outset, public authorities used these kinds of comparisons of statistical data as major tools to 'put Chernobyl into perspective', to illustrate that everyday life was rife with health threats that were far bigger than the risk imposed by the Chernobyl fallout and that in comparison to other causes of death the Chernobyl health impact was at best negligible; this argumentative strategy has already been encountered in the NRPB report above, in which the calculated Chernobyl death toll in the EC was put in relation to the general death toll from cancer.[184]

To extend the range of sources upon which my argument on the AEA's early Chernobyl narrative is built, it is opportune to include the 1988 AEA publication '*Nuclear Safety after Three Mile Island and Chernobyl*', which evaluates the accident.[185] This book contained the proceedings of the '*International Approach to Nuclear Safety*' conference that had taken place in June 1988 in Blackpool. The book's editor was G.M. Ballard, Head of the *National Centre of System Reliability*, based at the AEA. The preface opened with a very reassuring statement declaring that: '*There are slightly different viewpoints around the world on some of the detailed technical areas, but the overall picture pointed by the papers is one of a well considered and researched approach to*

developing a lung cancer. Were this person placed into a group of non-smokers, the average risk of every individual in this group would be lower than the risk that had been calculated for the smoker. This same underlying logic and statistical calculation were frequently used to establish Chernobyl's long-term effects. The totality of the radioactivity that was released was divided evenly amongst the total number of people affected by the fallout, i.e. all people living in Eastern Europe. Consequently, the calculated individual dose was very small indeed. But, as with the case of the smoker, this individual dose insofar as it was established through a statistical calculation does not say very much about individual risk. Wolfgang Bonß's work reflects on the wider implications of probabilistic risk assessments and describes how this way of thinking has impacted how risks and uncertainties are dealt with. See for example: Bonß, *Vom Risiko*, p. 97: '*Durch das Denken in Wahrscheinlichkeiten kommt es zu völlig neuen Kontingenzen im Umgang mit Unsicherheit, denn die lebensweltlich erfahrene vorgängige Strukturiertheit und Komplexität wird in einer spezifischen Form außer Kraft gesetzt. Wer die Welt als einen Zusammenhang von Wahrscheinlichkeiten begreift, nimmt die Struktur des Erscheinenden in reflexiver Distanz und unter einem größeren Zeithorizont wahr. Die Wirklichkeit wird gleichsam visualisiert, nämlich in einem abstrakten Raum von Möglichkeiten aufgelöst, die kombiniert und kalkuliert werden können, und deren Realisierung sich gleichsam „hinter dem Rücken" des Handelnden vollzieht.*' Furthermore, Bonß has reflected on the changes of probabilistic thinking that occurred in *modernized modernity* and that have profoundly called into question this way of assessing risks and uncertainties. See for example: Bonß, *Vom Risiko*, p. 239: '*Mit dem Übergang zur modernisierten Moderne verschiebt sich allerdings der Stellenwert der Wahrscheinlichkeit als Instrument des verwissenschaftlichten Umgangs mit Unsicherheit. Zwar wird keineswegs weniger in Wahrscheinlichkeiten gedacht und gehandelt als zuvor – im Gegenteil. Aber in dem Maße, wie der Wechsel vom Dispositiv der vermeidbaren und unvermeidbaren zu dem der akzeptablen und inakzeptablen Risiken voranschreitet, entstehen Probleme jenseits der Kalkulation von Wahrscheinlichkeiten. Zugleich schwindet das Vertrauen in die instrumentelle Kraft und Beherrschbarkeit des Wahrscheinlichkeitskalküls, und es taucht die Frage auf, wieweit die auf dieser Grundlage eingeübte „einfache" Verwissenschaftlichung der Unsicherheit überhaupt trägt.*' A telling example of the way in which probabilistic risk assessment has been called into question in relation to the nuclear enterprise is the position paper written by John Downer, *Nuclear Safety: A (Charlie) Brownian Notion*, Working Paper No. 07-12, University of Bristol, School of Sociology, Politics and International Studies, http://www.bristol.ac.uk/global-insecurities/workingpapers/downer.pdf (last accessed: 15 November 2013).

184 The use of statistics in public discourse as a means to illustrate 'facts' or 'truth' is a longstanding tradition. For the history of the political function of statistics in the Early Modern period, see: Lars Behrisch, "Political Economy and Statistics in the Late Ancien Régime." In *Writing Political History Today*, edited by W. Steinmetz, I. Gilcher-Holtey, H.-G. Haupt (Frankfurt a. M./New York: Campus, 2013): 175-190.

185 G. M. Ballard (ed.), *Nuclear safety after Three Mile Island and Chernobyl* (London/New York: Elsevier Applied Science Publishers, 1988).

ensuring that nuclear power plants are designed and operated to high standards of safety.'[186] The fact that not only were the viewpoints on technical details 'slightly different', but a profound disagreement had already sprung up by 1986 about the death toll as well, was, however, not mentioned in the preface. In his introduction, Ballard described the underlying frame of AEA's interpretation of the impact of Chernobyl. According to him, there was no reason at all to call into question nuclear power as a result of the Chernobyl accident. This was not only because it '*offers the only viable, economically-competitive source able to provide secure supplies*'[187] but also because there was simply nothing to worry about with this technology. '*The safety experts know nuclear power is safe but must bridge the gap between their views and the public perception*.'[188] For Ballard, how little the public perception of the risk surrounding nuclear energy was really grounded in truth became obvious in the debate over low-level radiation, as '*all attempts to explain leukaemia clustering on the basis of radiation from nuclear installations have failed.*'[189] He stressed, on the contrary, that instead of posing a threat, nuclear power was '*environmentally benign*', and that the '*nuclear community is intensifying its effort to get this message across to the public.*'[190] That nuclear advocates had succeeded in positioning nuclear power as an environmentally benign source of energy was to become obvious in the 1990s, when the public image of nuclear power was largely transformed into one of a saviour from the threats of climate change, a process commonly known as '*the greening of the atom'*.[191] But in 1988, shortly after the Chernobyl disaster, this positive image had yet to be (re-)established. Ballard, in an attempt to do so, pointed out that the '*emphasis on reactor safety has a key role to play in the future of nuclear power by helping to ensure that […] the public are satisfied that the technology is safe and that they are completely protected.*'[192] Given the importance the editors placed on this matter, the differences between the 'faulty RBMK design' and the 'safe design' of British reactors were greatly emphasized in the book. Thus, in his paper the '*Analysis of the RBMK against UK safety principle*',[193] P. G. Bonell (AEA) presented a list of 13 points in which the RBMK and the UK safety principle were simply not comparable. Other papers concentrated on such issues as the problem of the man-machine interface and the protection measures against fires and earthquakes. One representative from France presented the EDF's safety policy as an example of good practice. The paper written by other members of the AEA, '*Modelling*

[186] Ibid., p. v.
[187] Ibid., p. 18.
[188] Ibid., p. 9.
[189] Ibid., p. 12.
[190] Ibid., p. 22.
[191] For an analysis of the implementation of this image, see: Emmanuelle Mühlenhöver, *L'environnement en politique étrangère. Raisons et illusions : une analyse de l'argument environnemental dans les diplomaties électronucléaires française et américaine* (Paris: L'Harmattan, 2002).
[192] G. M. Ballard (ed.)*, Nuclear safety after Three Mile Island and Chernobyl*, p. 23.
[193] Ibid., pp. 90–105.

the consequences of reactor accidents,'[194] underpinned the point made by Ballard in the introduction that the effects of low-level radiation on health were not a crucial topic insofar as the they listed the fields in which research was currently carried out in the US and the UK: the health effects of low-level radiation was not among them. For an analysis of the AEA narrative of Chernobyl, it is also important to consider the death toll that was presented in the paper '*Consequences of the Chernobyl accident*' by W. Nixon and M.J. Egan (both AEA employees). Although they had calculated '*a total number of cancer fatalities in Western Europe, arising from the Chernobyl accident over the next decades, of around 1500*', this number was followed by the statement: '*this figure should be regarded as a likely upper estimate*'.[195] The way in which the Chernobyl death toll had been calculated by the AEA (as well as most of the other nuclear authorities in the years following the Chernobyl accident) was based on two main assumptions. Firstly, models created using research on the health impact of Hiroshima and Nagasaki were applied to the Chernobyl fallout; i.e. radionuclides set free by the atomic bombs and the way they were taken up by humans were equated with radionuclides released into the air by the burning reactor in Chernobyl. Secondly, a linear relationship between radiation dose and the risk of cancer mortality was hypothesized; this relationship was deemed to be 'conservative' and would therefore result in figures that were likely to be too high. In the years to come, these two assumptions became the centre of attention of actors criticising the numbers presented by the official experts. Many of the counter-experts, when evaluating these results, called into question these assumptions claiming that completely new models were necessary to fully and accurately evaluate the health impact of Chernobyl. But before considering the criticisms that were brought against these kinds of official Chernobyl reports, it is important to first add the narratives provided by some other British state officials.

The Government

In order to respond to and overcome the accusations raised by critics in early May 1986 that the government's response to Chernobyl severely lacked coordination and that not all information available on radioactivity levels in Britain had been correctly passed on, the government decided to take a pro-active strategy. In July 1986, *Her Majesty's Stationary Office* (HMSO) published the report '*Levels of radioactivity in the UK from the accident at Chernobyl USSR, on 26 April 1986, HMSO July 1986*.'[196] It was jointly edited by all the public entities[197] that had been involved in the

[194] Ibid., pp. 354-389.
[195] Ibid., p. 406.
[196] DoE et al., *Levels of radioactivity in the UK from the accident at Chernobyl USSR, on 26 April 1986* (London: HMSO, July 1986).
[197] In alphabetic order, these were: Department of Agriculture for Northern Ireland, Department of the Environment,

post-accident monitoring and decision-making process and contained '*information available to NRPB up to and including 1986. The data are arranged by environmental medium and geographical location in chronological order*.'[198] In practice, this meant pages and pages (almost 200 in total) of columns of numbers. In addition to the data, the report explained in detail the methods used in the procurement of these measurements, i.e. the ways in which the samples had been taken. However, this report did not include any analysis of the data. As a result, rather than truly bringing transparency to the decision-making process, the intent of this report was a move to show the public the amount of data on which public authorities had based their decisions, and in so doing demonstrate that their decisions were grounded in science and as such valid.[199]

But publishing a series of numbers proved not to be enough to mitigate all doubts about the appropriateness of the government's response to Chernobyl, doubts that persisted not only beyond Westminster' walls but also within the House of Commons. To gain further insight into the government's action during the aftermath of the accident, the House of Commons Agriculture Select Committee requested that the government write a report, which was delivered in early summer 1988.[200] The Ministry of Agriculture, Fishery and Food (MAFF) compiled a supplementary memorandum to the Government's response.[201] Although this memorandum was not intended to reach a particularly large audience, I refer to it nevertheless, as it is a very interesting source that gives detailed insight into the tasks and problems the MAFF was confronted with in the wake of the accident, particularly with regard to the aforementioned sheep farm restrictions. In addition, the memorandum elaborated on newly introduced EC regulations on radioactive food contamination and provided a detailed list of its post-Chernobyl research projects; for instance on the '*Dynamics of*

Department of the Environment of Northern Ireland, Department of Health and Social Security, Ministry of Agriculture, Fisheries and Food, National Radiological Protection Board, Scottish Office, Welsh Office.

198 DoE et al., *Levels of radioactivity in the UK*, p. 7.

199 From an STS perspective, there are different ways to interpret this form of communication with the public. On the one hand, the report can be considered as a statement against the involvement of laypersons in questions pertaining to radiation safety, seeing as the numbers are undecipherable to non-experts and therefore emphasized the technical knowledge required in the decision-making process. On the other hand, this publication gave the opportunity to informed readers, who were not part of the community of official state experts, to use the data to make their own calculations.

200 Despite intense efforts, I was unfortunately unable to get a hold of this document which seems to have been made public by HMSO (at least, it was quoted in various publications in this way). However, Chris C. Park in his book *Chernobyl. The long shadow* (London: Routledge, 1989) referred to this report and included some interesting quotes: '*The report stated that there was no convincing evidence that public health had been put at risk, although it was likely that some lamb with radiation levels above the statutory limit had been eaten by the public after Chernobyl. Contaminated lamb could have reached the shops by several routes, and the report concluded that "it must therefore be probable that some did so". However Mr Jerry Wiggin, Conservative chairman of the committee, stressed that "someone would have had to have an exclusive diet of contaminated meat for a lengthy period for any harm to come about"*.' (pp. 104) Park showed that despite some severe criticism, in particular with regard to the late revelation of a radioactive hot spot in North Yorkshire, '*the committee concluded that the Government has been on the whole successful in its objective of ensuring safe food in Britain, and that it had "got it right for nearly everybody"*.' (p. 105)

201 House of Commons Agricultural Committee, *Chernobyl – The Government's response, supplementary memorandum by the MAFF*, June 1988.

Radionuclide Uptake in Sheep' and '*Effects of Minerals on Reducing Caesium Uptake and Distribution in Upland Pastures.*'[202] Despite the considerable difficulties the MAFF had encountered regarding the sheep farm restrictions – difficulties that went from identifying appropriate marking colours to compensation of the farmers – its conclusion about the situation was rather positive: '*The extensive monitoring and rigorous controls imposed within the UK have proved successful in retaining confidence in the safety and quality of UK foodstuffs at home and abroad and UK exports of foodstuffs have not been adversely affected. In particular British exports of sheepmeat rose by around 28% in 1986 compared to 1985. Maintenance of confidence in British produce remains a high priority for the Ministry.*'[203]

It is interesting to contrast this memorandum, which was not intended to reach a wider audience, with the communications of the British nuclear authorities: in their publications, the issue of contaminated sheep was practically omitted. For British radiation safety experts, the link between the UK and Chernobyl consisted in the necessity of improving the man-machine interface in a power plant but not in radioactive fallout. Chernobyl, for them, had demonstrated that the weakest link in nuclear technology was the 'human factor' in running the plants and not the risks the technology itself posed for humans and the environment in general. In this regard, E.A. Ryder, Her Majesty's Chief Inspector of Nuclear Installations[204] stated in a conference in London in December 1986 that *'the main lessons from Chernobyl were the need to adopt a safe design and to rely more on layers of automatic control and protection equipment rather than on fallible human operators.'*[205]

Much like their French colleagues, British state officials focused their early Chernobyl narratives on three main aspects: the design differences between the RBMK and national plants, the low-hazardousness of the nuclear fallout in Western Europe, and the limited impact to public health in Eastern Europe. These aspects combined provided a narrative of Chernobyl that de-emphasized or dismissed the importance of the accident for the global nuclear programme. Undoubtedly, the accident could serve as an occasion to conduct further research in radiation ecology in order to gain more information on the transport mechanisms of radioactive particles in air, water and soil. Regarding the health impact of these particles, however, French and British state officials were completely convinced that they had the means to calculate its impact (and thus the death toll),

[202] For the list of Post-Chernobyl research and development, see: Annex B to the memorandum.

[203] Ibid., p. 37.

[204] Aside from this comment by E.A. Ryder, I did not find any other public statements on Chernobyl by the *Nuclear Installations Inspectorate* (NII). The NII, once named by Lord Marshall '*the independent nuclear "watchdog"*', was the UK's national nuclear safety inspectorate. In 2011, when the British radiation safety sector underwent a period of restructuring, the NII was incorporated into the newly founded *Office for Nuclear Regulation*.

[205] E.A. Ryder, "Regulation of nuclear power in the UK after Chernobyl," in *Nuclear risks: reassessing the principles and practice after Chernobyl. Conference: Papers and discussions* (London: IBC, 1987), p. 11.

although they admitted that there were some unknown variables in their equations. And although people would most certainly die because of Chernobyl, in relation to other threats to public health, such as smoking, these few deaths were not even observable. Yet, one result of Chernobyl was very clear to French and British nuclear state experts, who in it had identified a new task to add to their work agenda: they needed to better educate the panicking public about the safety of nuclear installations and about the benignity of nuclear radiation.

2.1.2 Nuclear power industry

The previous paragraph was dedicated to the analysis of the early interpretations of Chernobyl of the public authorities in France and Britain. This paragraph looks at the early narratives provided by actors connected to the nuclear power industry. The border between these two actor clusters is, especially with regard to 1986, actually quite artificial, the moment that all major institutions and companies in the nuclear sector were state-owned at this time. But because this analysis will take these actors and their narratives through the next 20 years, it makes sense to introduce this differentiation from the start. The nuclear sector, in France and in Britain alike, underwent profound reorganization and privatization in the years following the Chernobyl accident. For this reason, the 'public authorities' and 'nuclear power industry' clusters are discussed separately. To be sure, in the field of nuclear technology, which is strongly dependent on state funding and guarantees, the nuclear sector will always be closely linked to the state. Because of this, the categories introduced here should be understood as a way to structure my material as coherently as possible rather than as a statement on public-private interdependencies in the nuclear enterprise.[206]

France

EDF

In the case of France, statements made in 1986 by the plant operator *Électricité de France* (EDF) could very well be discussed under the category of 'public authorities'. The EDF had been established in 1946 as the national public electricity producer and provider. This implementation had meant that the multitude of regional and local producers and providers were socialized and centralized under this overarching operator. The EDF's nuclear history was marked for a long time

[206] Another option would have been to draw a line between operators and inspectorates. But with this categorization, we are confronted with the situation that in many regards, nuclear institutions, for a long time, controlled themselves, as may be exemplified by the IPSN, which was as an inside-institution of the CEA.

by its rivalry with the CEA within the context of the *guerre des filières*, i.e. the struggle over which reactor design should be implemented on a large scale in France.[207] Due to its size – in 2008, the EDF had 104,000 employees – and its important decisively political role, the EDF has been often characterized by its critics with such terms as *toute-puissance* (all-powerful) and *État dans l'État* (state within the state). In 2004, the company was transformed into a stock corporation. Almost all of the stocks, however, have remained in public hands. In 2008, approximately 85 per cent of the stocks were still direct assets of the French state.[208]

Back in 1986, the EDF was not just a state-owned company, but its representatives were also attributed the role of public authorities. In this regard, Pierre Tanguy, the EDF's inspector general for security and safety, gave interviews and figured prominently in the media like his colleagues Pierre Pellerin and François Cogné – suffice is to say he gave very similar statements. For instance, in an interview on 30 April 1986 on a channel *Antenne 2* news show, Pierre Tanguy stated: '*If it [the 'nuclear cloud'] will arrive here, I think one should ask the weather specialists, but the toxicity […] that absolutely does not represent any danger […] that becomes totally insignificant.*'[209] Interventions of EDF representatives in the early media reporting on Chernobyl were not the only statements provided to a broad public. In October 1986, the company published a *dossier d'information* recapitulating the topics discussed in the IAEA conference in Vienna.[210] Like the British AEA brochure, it claimed that '*it is possible to take a more or less complete picture of the causes, the evolution and the consequences of the accident*'.[211] There were still some questions on details that the Soviet participants of the conference had left unanswered, but this information would be provided soon. However, the causes for the accident were clear, they '*can be found in its design 'deficiencies', but at the same time, it was provoked by an incredible sequence of human*

[207] Underpinning this question of reactor design (a gas-graphite reactor developed in France versus a light-water reactor developed in the US) there were two competing *techno-political regimes*, i.e. (very simplified) two different ways of theoretically and practically approaching the nuclear future of France. In her detailed analysis of the French post-war nuclear enterprise, Gabrielle Hecht identified a 'nationalist' regime on the part of the CEA and a 'nationalized' regime on the part of the EDF, see: Gabrielle Hecht, *The Radiance of France*. Markku Lethonen, Claire Le Renard and Arthur Jobert identified a similar situation in the British case, where the CEGB favoured the American PWR design, while the AEA favoured the *Advanced Gas-Cooled Reactors* (AGR) developed in Britain. See for this interesting comparison: Markku Lethonen, Claire Le Renard, Arthur Jobert, *The diverging trajectories of Fast Breeder Reactor development in France and the UK (1950s-1990s): a tentative comparison*, paper presented at the 6th Tensions of Europe plenary conference "Democracy and Technology: Europe in Tension from the 19th to the 21st century" Paris, 19-21 September 2013.

[208] EDF, *Rapport annuel 2008* (Paris: Groupe EDF, 2009).

[209] A2, Interview with Pierre Tanguy, in *MIDI 2*, 30 April 30 1986. Transcription and translation from the original recording held in the INA by the author: '*Si ça va venir chez nous, je crois qu'il faudrait le demander aux spécialistes de la météo, mais par contre, la toxicité [...] ça ne représente absolument aucun danger [...] ça devient totalement insignifiant.*'

[210] EDF, *Tchernobyl. Dossier d'information* (EDF 1986). The following account on EDF's publications is an adaption of chapter 5.2 in: Kalmbach, *Tschernobyl und Frankreich*, pp. 87.

[211] Ibid., p. 1: '*Il est possible de dresser un bilan à peu près complet des causes, du déroulement et des conséquences de cet accident*.'

error.'[212] Also like the statements released by French public authorities, the EDF's dossier placed emphasis on the differences between France and the USSR regarding reactor designs, approaches to safety, and operating conditions. Furthermore, the EDF drew parallel conclusions to that of the AEA with regard to the Chernobyl accident, reasoning that what could be learned from the incident was that the possibility for human error in plant operation had to be further reduced. In addition, information on nuclear issues needed to be provided to the public in a more comprehensible manner. So while the nuclear experts in Britain placed emphasis on educating the public, their French colleagues rather than passing on more information, believed the information that was already available had to be made easier to understand. Already during the Vienna conference, in an interview with *Quotidien de Paris*, Jaques Leclercq, the EDF's *responsable de la production* (Head of Production) had announced that '*from now on, we will work together with communication specialists*.'[213]

One of the first pieces in this announced communication campaign was the '*Tchernobyl*' brochure, published in 1987.[214] The intention to keep the information simple and comprehensible was openly addressed on the first page of the brochure, where the reader was told that it was the aim of the EDF to '*simply re-explain, in a way that would be comprehensible for everybody, these regrettable events which should not have a successor after Chernobyl*.'[215] Like the early publications on Chernobyl disseminated by British public authorities, the authors of the EDF brochure considered a comparison between the risk imposed by Chernobyl and health risks encountered in daily life the most suitable way to put into perspective the impact of the accident. Thus, the first page compared people's nuclear fears of today with the fears former generations exhibited towards the first railways and airplanes; the brochure added that this comparison, however, was misleading given that railways and airplanes had '*provoked infinitely more deaths than Chernobyl.*'[216] A general account on nuclear energy was given in the first section of the publication. In order to ensure that everybody could understand the narrative, the basic vocabulary along with descriptions of the different kinds of ionizing radiation and the basic physics of how nuclear plants functioned were provided. The text then addressed Chernobyl, describing the accident as a result of '*human error, an unqualified operation crew, […] and a less stable reactor than ours*.'[217] In this regard, the narrative

---

212 Ibid.: '*Si l'accident a trouvé ses causes dans les 'insuffisances' de conception, il a été aussi provoqué par une incroyable séquence d'erreurs humaines*.'

213 Pascale Richard, "Tchernobyl: Quelles rétombées en France?," in *Quotidien de Paris*, 23 and 24 August 1986: '*[…] désormais travailler avec des spécialistes de la communication*.'

214 EDF, *Tchernobyl* (Dijon: EDF, 1987).

215 Ibid., p. 1: '*[…] de réexpliquer simplement, à la portée de tous, les événements éminemment regrettables, mais qui devraient être, après Tchernobyl, sans lendemain*.'

216 Ibid., p. 1: '*[…] pourtant ont entraîné infiniment plus de morts que Tchernobyl.*'

217 Ibid., p. 28: '*[…] des erreurs humaines, un encadrement peu qualifié […], un réacteur moins stable que les nôtres*.'

strategy of alienation was underpinned by references to anti-Eastern European/anti-Soviet stereotypes, which were expressed in the way that such statements intimated that plant workers were less skilled and reactors less well designed in the East than in the West. In terms of the evaluation of the health impact of Chernobyl in Eastern Europe, the narrative was far from apocalyptic. The brochure stated that apart from the firemen who were fatally irradiated during the emergency response, there would not be '*any short-term deaths*'.[218] Moreover, the long-term health impact would be negligible: *'300 supplementary fatalities over the next twenty years within the totality of the evacuated population (135.000 inhabitants).*'[219] In this 40-pages brochure, the topic of health effects in France was only mentioned in one sentence, a sentence that read: '*One can say that in France, the general radioactivity was a hundred times lower than during the atomic [weapons] tests of the [19]60s, and that the most exposed citizen will not experience more damaging health effects than were he to have undergone one or two pulmonary x-rays*.'[220] Hence, the EDF rejected entirely the issue of French self-affectedness with regard to the transfer of the accident scenario to French plants as well as in terms of the possible health effects of the fallout. Instead, the emphasis was placed on the issue of 'radiophobia': The section devoted to the health effects closed with the remark that '*the political and journalistic exploitation of this phenomenon [of very low doses of radioactivity] contributed to create panic in certain countries, in particular in Germany*.'[221]

Other than publishing information brochures on Chernobyl, another strategy actuated to rebuild public trust in the national nuclear fleet by the operators, in France as well as in Britain, was the encouragement of direct interaction with the technology itself. Even before the accident at Chernobyl, many sites already contained information centres, and guided on-site visits had been a popular weekend family activity for quite some time.[222] These kinds of direct interactions with the interested public were intensified after Chernobyl.

---

[218] Ibid., p. 34: '*[…] aucun décès à court terme*.'

[219] Ibid., p. 34: '*[…] 300 décès supplémentaires dans les vingt ans à venir pour la population totale évacuée (135.000 habitants)*.'

[220] Ibid., p. 34: '*On peut dire qu'en France, la radioactivité générale était cent fois inférieure à celle connue pendant les essais atomiques des années 60, et que le citoyen le plus exposé ne subira pas plus d'effets dommageables à sa santé que s'il avait subi une ou deux radios des poumons*.'

[221] Ibid., p. 34: '*L'exploitation politique et journalistique du phénomène [des doses très faibles] a contribué à créer un effet de panique en certain pays, en particulier en Allemagne*.'

[222] For the French case, see: Hecht, *Radiance of France*. In Britain, it was primarily the Sellafield visitor's centre that had been in great demand. It was only closed recently, due to the vigilance policies that have emerged in Britain for fear of terrorist attacks.

Britain

CEGB

Similar to its French counter-part the EDF, the *British Central Electricity Generating Board* (CEGB) also took an active role in providing the broader public with a 'first hand expert evaluation' of the impact of Chernobyl. Until its privatization in the 1990s, the CEGB was the key player in UK's electricity industry as it was responsible for electricity generation in England and Wales; it owned the nuclear and other power plants in these parts of Britain, and the grid itself. Furthermore, it served as a research institution. In this regard, the CEGB and the EDF held similar positions in their respective national nuclear sectors. However, in the following decades, the privatization of the EDF would consolidate its role in France and even transform it into a global actor, whereas the CEGB would be broken up by the privatization of the British electricity sector – a process, incidentally, during which most of the British nuclear power plants were taken over by the EDF.

But, coming back to September 1986, when the CEGB published its information dossier '*Chernobyl*',[223] just as the EDF was to do the following month. This brochure spoke of the RBMK reactor design, how the accident occurred (for which the faulty design and the operators were claimed responsible) and the containment measures, but also the fallout that had spread over Europe and its health impact. With regard to the death toll at that time, it stated that '*some 31 people have died as a result of the accident either directly or as a result of receiving lethal radiation doses.*'[224] The long-term health effects were also discussed. Theses effects were directly compared to 'natural background cancers' – alongside with the smoking-topos, this was another common topos used to place Chernobyl's health effects into perspective. The authors, John Collier and Myrddin Davies, formulated this comparison as follows: '*Current estimates indicate perhaps 6 – 40,000 thyroid cancers and other cancers resulting over the next 40 years in the affected parts of Russia and Western Europe. This figure needs to be compared to a figure of 40 million cancer deaths expected in the same population over the same time period*'.[225] Thus, the health impact the accident had in the immediate and would in time was declared to be rather limited. In this regard, the narrative by the CEGB was quite similar to that which would be provided by the EDF. However, the aspect of anti-Soviet stereotypes was less present. On the contrary, the CEGB actively praised the Soviet management of the emergency. It provided a picture of the situation in the near vicinity of the reactor that was far from being chaotic, when the authors wrote in the last sentence of the brochure: '*Given that no accident of such a magnitude had previously happened to any nuclear power plant in the world, the co-ordination and response of the many Soviet recovery services appears to have*

[223] John G. Collier and L. Myrddin Davies, *Chernobyl* (Glouchester: Central Electricity Generating Board, 1986).
[224] Ibid., p. 1.
[225] Ibid., p. 18.

been exemplary.'[226] Many other accounts, however, had placed these emergency operations under a rather different light, speaking of a 'general irresponsibility' of the Soviet leaders towards the population. This criticism regarded foremost the claim that Pripyat had been evacuated far too late and that the firefighters had been sent in to get the fire in the burning plant under control without having first been properly warned of the risk to their lives from the radiation. Although anti-Soviet stereotypes were not used in this brochure to frame the emergency operations, the CEGB did use them on other occasions to explain the reasons for the accident. In a paper that B. Edmondson, Director of the Nuclear Co-ordination Group of the CEGB, presented in the conference '*Nuclear Risks – Reassessing the Principles and Practice after Chernobyl*' that took place in London in December 1986,[227] he attributed the accident to a kind of 'simplemindedness' of Soviet nuclear engineers and plant operators: In his paper on '*The Chernobyl accident and its implications for operators of civil Nuclear Power Plants in the UK*', B. Edmondson elaborated that '*the RBMK designers had suffered a tremendous psychological blockage in not foreseeing that the plant operators would commit an extensive series of violations of vital safety procedures.*'[228] Regarding the safety of British nuclear power plants, on the other hand, Edmondson saw no cause for worry given '*the RMBK reactor design is very different indeed from anything elsewhere in the world.*' For him, this fact '*by itself could perhaps provide a satisfactory and resounding "No"*' to the question '*Can it happen here?*'.[229] Thus, Edmondson's narrative contained a strategy of alienation, of putting the responsibility on an entity alien to the British nuclear program. However, seeing as '*operator action is a common threat with all reactor types,*'[230] the UK was, from Edmondson's point of view, not completely free of risk from possible future accidents. Therefore, he proposed that action should be taken in order to guarantee operator training '*in the deeper "educational sense."*'[231] The nuclear expert of the CEGB did not consider the technology in itself dangerous. Rather it was the personnel that posed the true problem.[232] In that way, like the AEA, the CEGB called for an improvement in

---

226 Ibid., p. 20.

227 IBC Technical Service, *Nuclear risks: reassessing the principles and practice after Chernobyl. Conference: Papers and discussions* (London: IBC, 1987).

228 B. Edmondson, "The Chernobyl accident and its implications for operators of civil nuclear power plant in the UK," in *Nuclear risks: reassessing the principles and practice after Chernobyl. Conference: Papers and discussions* (London: IBC, 1987), p. 1.

229 Ibid., p. 8.

230 Ibid.

231 Ibid.

232 This identification of the personnel as the source of the problem is well in line with Wolfgang Bonß's general reflections on the efforts to create clear accountabilities in the period after an accident. Bonß, *Vom Risiko*, p. 201: '*Auf der anderen Seite folgt aus dem konstitutiven Handlungsbezug keineswegs eine Verantwortbarkeit, und noch komplizierter ist es bei der Frage der Haftung. Derartige Umdefinitionen sind bei Unfällen nämlich nur begrenzt möglich, auch wenn dies bei einschlägigen Ereignissen vom Autounglück bis hin zur Tschernobyl-Katastrophe in der Tradition des liberalen Modells gerne gemacht wird. Beliebt ist beispielsweise der stereotype Verweis auf angebliche Bedienungsfehler und Nachlässigkeiten – ein Argument, das unabhängig von seinem Wahrheitsgehalt eindeutig Verantwortlichkeiten schafft. […] Ungeachtet dessen müssen Unfallursachen auch und gerade unter*

the man-machine interface.

This narrative of placing the blame for the accident on a technical setting, alien to the British nuclear sector, and on unqualified 'Russian' operators was also espoused by the chairman of the CEGB, Lord Marshall of Goring. In his contribution to the House of Lords debate on '*Nuclear Power in Europe*' on 20 November 1986 – later published by the CEGB as a leaflet for wider distribution – he explained why '*Chernobyl could not happen here*'.[233] Marshall reached this conclusion using the information provided by the report the '*Russian*' delegation had submitted to the IAEA conference in August. The '*shortcomings*' of the reactor design were what had caused the accident, shortcomings that did not exist in British plant design and safety culture, shortcomings that had, as it happened, already been '*identified by a team of British engineers who studied this reactor in 1975*'.[234] Nuclear engineers had identified one 'shortcoming' in particular of the RBKM reactor design, its *positive void coefficient*. This system specificity required the operators to take an active role in the decision-making process in the event an unstable situation in the reactor developed. In this regard, Western nuclear engineers drew a line between 'Western safety culture' that was based on built-in protections, versus the 'Soviet safety culture', which, from their point of view, gave far too much responsibility to the plant operators. Based on these assumptions, Lord Marshall reasoned: '*We are satisfied that there is no narrow technical issue which we in the West could or should learn from the disaster. We have very well established safety rules which we follow meticulously. The Russians have chosen to ignore many of them and sadly have now paid the price*.'[235] Thus, there was no reason to let the Chernobyl accident influence the decision on reactor new build projects in Britain, namely on the Sizewell B project. After all, Britain had to keep up with other nations in this important economic field: '*Our competitors in France and Japan have reaffirmed their intention to expand their nuclear programme, and the Russians themselves have recently outlined ambitious plans to increase nuclear power production*.'[236]

Watt Committee on Energy

The reasoning used by the CEGB was replicated by another key player of the British energy sector, the Watt Committee on Energy. The Watt Committee on Energy was instituted in the aftermath of the oil crisis of 1973/74 and assembled 61 British engineering and research institutions, ranging

Risikogesichtspunkten geklärt werden, und zwar vor allem, um sich selbst zu versichern, daß sich das „unglückliche Zusammentreffen verschiedener Umstände" in der unsicheren Zukunft nicht wiederholen lässt.'

233 Lord Marshall, *The Chernobyl Accident* (London: CEGB, December 1986).

234 Ibid., p. 1.

235 Ibid., p. 3.

236 Ibid. (last sentence of the text)

from the *British Nuclear Energy Society* to the *Royal Institution of Naval Architects*.[237] In 1988, the Watt Committee on Energy published the report '*The Chernobyl accident and its implications for the United Kingdom.*'[238] The report was compiled by an internal working group[239] and consisted of eight sections each written by different members of the committee, with an additional ninth section on recommendations and conclusions of the working group as a whole. The report was published with the financial support of the CEGB, the *South of Scotland Electricity Board*, *British Nuclear Fuels*, the UKAEA and the *National Nuclear Corporation*. It was intended to reach and inform a broad audience on Chernobyl, and not just people linked to the nuclear sector. In the formulation of its work objectives, the Watt Committee perceived its role to be '*to promote and assist research and development and other scientific or technological work concerning all aspects of energy; to disseminate knowledge [... and] to promote the formation of informed opinion on matters concerned with energy*.' Therefore, by publishing this report, it clearly intended to claim the role of 'an independent actor' in the Chernobyl debate, by stressing at the same time that it represented '*some 500,000 professionally qualified people*', i.e. the UK's community of energy experts as a whole.

In his foreword, the chairman of the Watt Committee, G.K.C. Pardoe, hinted that for the committee the impact of the accident consisted more in its political than in its health effects when he wrote that '*there are comparatively small numbers of people, mainly in limited areas, for whom the direct effects of Chernobyl are still important, and the long-run indirect effects are important for almost everybody.*'[240] Regarding the report's narrative on Chernobyl, particular attention must be paid to section 4, '*The radioactive release from Chernobyl and its effects*' by Barry Smith and Arthur Charlesby; section 5, '*Accident management in the USSR and the United Kingdom*' by Glynne Lewis; as well as section 9, '*Comments, recommendations and conclusions*'.[241] The authors of section 4, after discussing the inventory of the release, its deposition to the ground in the UK, and the contamination of foodstuffs caused by the deposits, commented on Chernobyl's health effects. Their remarks are worth being quoted in detail: '*Beyond 100 km from Chernobyl, the effects of the*

[237] All member institutions of the Watt Committee on Energy are listed on page 141 of the report to which I will refer in this paragraph. A list of all reports published by the Watt Committee on Energy until 1988 can be found on page 142 of the report quoted here.

[238] Norman Worley and Jeffery Lewins (eds.), *The Chernobyl accident and its implications for the United Kingdom* (London/New York: Elsevier Applied Science Publishers, 1988).

[239] The members of the working group were (in alphabetical order): F.L. Allen, J.L. Bindon, R. Bulloch, A. Charlesby, D.R. Cope, P.M.S. Jones, J.D. Lewins, G. Lewis, J.G. Mordue, G.F. Oliver, G.K.C. Pardoe, P.D. Potter, F.B. Smith, G.N. Walton, N.G. Worley.

[240] Worley/Lewins, *The Chernobyl accident and its implications for the United Kingdom*, p. vi.

[241] The other sections of the report dealt with the design of the Chernobyl reactor (2); the description of the evolution of the accident, which was mainly based on the USSR-report to the IAEA of August 1986 (3); United Kingdom and USSR reactor types (6); reactor operation and operator training in the UK (7); and international dimensions of the implications of the Chernobyl accident for the UK (8).

additional uptake of radioactivity into the human population are likely to be so small that they will be impossible to detect even by the most careful of medical surveys over the next few decades. This simple truth was largely ignored by the media and has led to considerable anxiety and exaggerated fear of the nuclear industry. On the other hand, some deaths may well result, although how these should be interpreted is a matter of some debate: for example, many may occur in old people nearing the end of their lives anyway. This is not intended to sound callous; but it is intended to put the problem in perspective. W. K. Sinclair has given statistics of deaths per year in the US from avoidable 'accidental' causes. Nuclear power generation, including the very occasional release, is said to cause typically 100 deaths per year. Smoking causes 150,000, alcohol 100,000, road accidents 50,000 and accidents with guns 17,500. Chernobyl almost fades into insignificance by comparison.'[242] Leaving aside the problem of a comparison in which, as the authors stated themselves, the exact figures on one of the sides are not known, it is difficult not to consider this statement as biased ('callous' might be not the right word).[243] For the most recent numbers of the Chernobyl death toll at the time, the Watt Committee report listed two plant workers who had died in the explosions and resulting fires and 29 others who had died in the following days due to their radiation exposure. With regard to the health impact on the 135,000 evacuees, the report stated that '*none of these people showed any clinical symptoms, although it is estimated that up to 1,000 of them may develop cancers in the next few decades.*'[244] For the health impact in the UK – which, according to their calculations, would amount to 80 thyroid cancers, 4 fatal cancers and 40 general fatal cancers over the next 50 years[245] – the report presented a comparison that can be considered yet another topos in the Chernobyl debate: The comparison of the Chernobyl fallout with natural background radiation. The authors wrote: '*A much greater risk affects people living in areas with high radon concentrations, for example in Cornwell. Well-sealed modern housing in such areas can, it is believed, give rise to a risk of 1 in 2,500 of developing associated lung cancer in each year. This is some 10^4 times greater than the risk from Chernobyl fallout.*'[246] The topos of the 'Chernobyl fallout vs. natural background radiation' comparison can also be found in the French discourse, where in terms of a 'problematic area' with high radon background radiation, the *Massif Central* can be equated with Cornwell. The intrinsic flaw with this comparison, and also with the smoking-topos, is the problem of an un-weighted comparison: whereas the exposition to radon in

[242] Worley/Lewins, *The Chernobyl accident and its implications for the United Kingdom*, pp. 31.
[243] As stated above, the comparison of the Chernobyl death toll to the smoking death toll was used from the beginning by nuclear advocates to 'put Chernobyl in perspective'. It has been criticized mainly for comparing death tolls caused by individual choices and actions to a death toll caused by an external event upon which the people affected did not have any influence.
[244] Worley/Lewins, *The Chernobyl accident and its implications for the United Kingdom*, p. 32.
[245] Ibid.
[246] Ibid.

Cornwell is a natural environmental condition, the Chernobyl fallout was men-made and could have been avoided.[247] When the Watt Committee's statements on the health impact are analysed in terms of the analytic categories of self-affectedness and radiophobia/apocalypse, the report clearly argued against exaggerated nuclear fears, in Western as well as in Eastern Europe. Though Chernobyl had produced an undeniable health impact, as the authors themselves phrased it, it '*faded into insignificance by comparison*' to other risks.

What is even more interesting regarding the narrative on Chernobyl presented by the Watt Committee report is how it described the way in which the accident was handled in the USSR (section 5). The whole evacuation process was presented as having been well organized, and to having been executed in such a way as to ensure that the accident would not cause any harm to the people in the region. For example, the schedule of the evacuations – which had been severely criticized in many other accounts, especially from authors from within the USSR – was described as having been rather well planned: '*the delayed evacuation of the population in the vicinity of the NPS [Nuclear Power Station] is understood to have been in accordance with official Soviet evacuation plans, which closely followed the recommendations of the International Commission of Radiological Protection*.'[248] According to the Watt Committee report, the evacuees were well taken care of, as '*the relocation centres were equipped with medical and other emergency service resources to carry out personal decontamination, compulsory dosimetric monitoring, blood sampling for laboratory testing and replacement of contaminated clothing.*'[249] Likewise, the procedures followed to extinguish the fires and to build the sarcophagus were described as good examples of organization skills: '*Dose limit controls meant a large replacement work force over a considerable period of time – a formidable task.*'[250] The word *liquidator* was not mentioned once in this account. The only time when the work force was personalized, was when it was given the name

---

[247] In his reflections on the strategies of the *normalization* and *re-definition* of risks and uncertainties, Wolfgang Bonß referred explicitly to the topic of background radiation in Chernobyl evaluations to illustrate his point. Bonß, *Vom Risiko*, p. 82: '*Unter dieser Voraussetzung sind „Normalisierungen“ auch nur vor dem Hintergrund einer Umdefinition und Verharmlosung der Gefahren zweiter Ordnung denkbar. Exemplarisch lässt sich dies an der viel zitierten „Hintergrundstrahlung“ studieren. Zwar ist diese nicht erst durch Tschernobyl gestiegen; mindestens ebenso wichtig sind frühere, zum Teil nach wie vor unbekannte Unfälle und die extensiven Atomwaffenversuche der fünfziger und sechziger Jahre. Gleichwohl verweist die Rede von der „Hintergrundstrahlung“ auf eine bemerkenswerte Umdefinitionsleistung. Denn der Begriff suggeriert, daß es sich hier um ein Phänomen handelt, das zu den unveränderbaren Rahmenbedingungen gehört – eine zweifellos richtige Einschätzung, die freilich unterschlägt, daß die jetzt unveränderbaren Rahmenbedingungen zuvor durch Risikohandlungen affiziert, wenn nicht hergestellt worden sind*.' Moreover, in the comparison between Chernobyl fallout and natural background radiation, we are dealing with different matters that can threaten human health. In simple terms, leaving aside the debate on low-level radiation health effects, we have, in the one case, a radon, the inhalation of which can cause lung cancer and, in the other, we are dealing with the radioactive isotopes of iodine and caesium, the ingestion of which can cause thyroid diseases and leukaemia.

[248] Worley/Lewins, *The Chernobyl accident and its implications for the United Kingdom*, p. 38.

[249] Ibid.

[250] Ibid., p. 39.

of '*volunteer miners.*'[251] However, when assessing this Chernobyl narrative using my third category, this account cannot be described as 'pro-Soviet'. This rather positive account of how the accident was contained and managed by the Soviet authorities was rather intended to illustrate the manageability of a nuclear accident. My hypothesis is that the reasons underlying this narrative should be understood as follows: 'If the Russians can handle such an accident, there is even less reason to worry that an accident might occur in a Western plant'.

This narrative of a manageable accident reinforced the narrative of easily calculable health risks. Alltogether, Chernobyl was presented in the Watt Committee report as a 'normal' industrial accident. According to this interpretation, the '*Comments, recommendations and conclusions*' (section 9) pointed in a very clear direction. For instance, it was proposed that '*nuclear experts from the industry should be encouraged to provide specialist lectures to graduates and undergraduates as well as, perhaps, to schools.*'[252] Here again, it was the public's ignorance on 'scientific facts' that had resulted in a problem and not the technology as such. Alongside the ignorance of the public, lay another disturbing factor that had to be tackled: the plant worker. The question as to whether '*such an accident could occur in the United Kingdom*' was answered with a '*no*' – as long as it could be guaranteed that '*failure of the human system*' would be avoided.[253] '*Reactor operation and operator training in the United Kingdom*' (the topic of section 7 of the report) were thus seen as the most important fields within which action ought to be taken. After all, '*the accident would not have occurred if the plant operators had proceeded to carry through correctly the special instructions necessary for the operation of the test.*'[254] A second strategy of alienation becomes obvious in this account, too: the scientific experts of the British nuclear sector not only drew a clear line between their own expertise and knowledge in reactor design and nuclear safety and the expertise and knowledge in these fields on the part of their colleagues in the USSR. In addition, they clearly made a strong distinction between scientists and plant workers. In either case, the fact that the distinction was made at all denoted the inherent belief that the others, i.e. the Soviets and the plant workers, were inferior.

However, this distinction made between the 'knowledgeable scientist' and the 'untrustworthy operator' was not exclusive to British narratives. Also in France, the 'man-machine interface' was identified as the area in which French nuclear experts saw room for improvement. But aside from these two national cases, the 'failure of the plant operators' became, next to 'the faulty design', the universal narrative used to explain the cause of the accident.[255] In this regard, during the IAEA

[251] Ibid., p. 38.
[252] Ibid., p. 95.
[253] Ibid., p. 98.
[254] Ibid., p. 61.
[255] Wolfgang Bonß interpreted this ascription as a general strategy to create strong causalities in the evaluation of an

Chernobyl conference in Vienna in August 1986, the delegation from the USSR had declared – Western accounts on this conference often preferred the term 'admitted' – that the accident had been caused by the irresponsible actions of the plant personnel. It was this argument that led to the trial against six technicians and officials of the Chernobyl plant in 1987 – often referred to as the *scape-goat trial*. It did not help the accused that though '*three defendants blamed the reactor's design or equipment for the disaster, soviet officials said the accident, which occurred April 26, 1986, was entirely a result of human error*.'[256] In accordance with this interpretation, research in risk management in the nuclear industry in the following years focused on the question as to how staff could be better trained to trust the machines and not their own evaluations in the case of an emergency.

To conclude this consideration of early Chernobyl narratives that have been provided by the actors from the field of the British nuclear power industry, one more institution that took over an active role in the early Chernobyl debate must be mentioned: *The British Nuclear Energy Society* (BNES). The BNES was a learned society for professionals working in the nuclear sector. In 2009, it merged with the *Institution of Nuclear Engineers* into the *Nuclear Institute* (NI). Like many other publications on Chernobyl provided by actors of the British nuclear sector, the '*appraisal*' BNES published of Chernobyl in 1987 consisted of a compilation of papers that had been presented in a conference the BNES had held in London in October 1986.[257] Representatives of the nuclear sector along with those of the public authorities – namely from the NRPB and the AEA – participated in the conference. The opening address of BNES's Director General, J Rimington, clearly expressed where he situated the impact of the accident: '*The principle immediate effect of the Chernobyl accident is political and throws the future of nuclear power generation into the political cauldron.*'[258] It is quite interesting that the BNES only started to consider nuclear power generation

accident in order to demonstrate that a similar event could be avoided in the future. Bonß, *Vom Risiko*, pp. 80: '*Wie am Beispiel von Tschernobyl in breitenwirksamer Form deutlich geworden, schlagen bei derart unübersichtlichen Systemen die Folgen in einer verselbständigten Form zurück, und zwar auf Entscheider und Betroffene gleichermaßen. Zwar mag es möglich sein, den Unfall ex post auf ein entscheidungsbezogenes Risikohandeln zurückzuführen und starke Kausalitäten zu konstruieren – genau dies ist die Aufgabe aller Unfallkommissionen, die sich stets hektisch bemühen, die entscheidende Ursache für den zur Diskussion stehenden Unfall zu finden, um so eine Vermeidbarkeit und die prinzipielle Beherrschbarkeit des Prozesses zu demonstrieren. […] So wurde im Falle von Tschernobyl sofort auf die sicherheitstechnisch bedenkliche Konstruktion des Unglücksreaktors oder auf Schlampereien der Bedienungsmannschaft und der Leitung hingewiesen.*'

[256] The New York Times, "Chernobyl trials begin," 8 July 1987. The accused were: Anatoly S. Dyatlov, assistant to Chernobyl's chief engineer; Viktor P. Bryukhanov, plant director; Yuri A. Laushkin, senior engineer and inspector; Nikolai M. Fomin, chief engineer; Boris V. Rogozhin, shift director of Reactor 4; Aleksandr P. Kovalenko, chief of Reactor 4.

[257] British Nuclear Energy Society, *Chernobyl: a technical appraisal. Proceedings of the seminar organized by the British Nuclear Energy Society held in London on 3 October 1986* (London: Telford for the British Nuclear Energy Society, 1987).

[258] Ibid., p. 1.

to be a political topic after the Chernobyl accident had taken place. This claim indirectly reveals how minor a role the anti-nuclear power plant protests had played in the nuclear history of Britain.

Perhaps one of the most salient points present in all of the early evaluations of Chernobyl's health impact released by the various actors of the British nuclear energy sector, is that they deemed that the effects would be quite limited. It is also clear that, with regard to the immediate victim count and the evolution of the incident, they had accepted as true the narrative provided by the USSR to the IAEA conference of August 1986 and went on to present these details as uncontested facts. In those instances in which they were critical, it was because they expected the level of the health effects in the vicinity of the plant and the rest of Eastern Europe to be much lower than that which had been presented by the USSR delegates at the conference. On the cause of the accident, these narratives willingly adopted the explanation that it had been caused by combination of factors, the faulty reactor design and the violation of clear safety rules by the staff of the plant. From this stance, the narratives were able to build their argument that such an accident could simply not happen in the UK. If the British nuclear sector was to learn any lesson from the Chernobyl accident, then it was that the human element had to be contained as much as possible and the mechanical procedures had to take precedence. Furthermore, the narratives pushed for increased communication with the concerned public, or rather the education of this misinformed public had to be improved the moment that the reactions towards Chernobyl had shown that a great number of people were needlessly worried about ionizing radiation. This situation definitely needed to be changed in order to ensure that the good of nuclear energy would be further appreciated, not least because this technology was to be expanded further in the nearer future. Compared with the advantages of nuclear electricity generation, the impact of the Chernobyl accident, in the short- as well as in the long-term, was relegated to the position of just another industrial accident among others.

2.1.3 Anti-nuclear groups and other critical voices

Britain

Sheep Farmers

Following the heavy rainfalls in early May, the MAFF started to collect samples of foodstuffs in order to monitor radioactive contamination. Aside from radioactive iodine, which has a very short half life and therefore ceased to cause concern already after several days, another radionuclide with a longer half life needed to be monitored: caesium. Levels of radiocaesium remained high in one

foodstuff in particular: upland sheep. Many of the meat samples collected by the MAFF exceeded the newly established EC-threshold of 1,000 Becquerel per kilogram. Therefore, restrictions on the movement, sale and slaughter of sheep were imposed: in England and Wales on 20 June, in Scotland on 24 June, and in Northern Ireland on 14 September.[259] Over the following months, several compensation schemes were introduced, and a mark and release system was implemented for the sheep in restricted areas. Initially, the restrictions were imposed on nearly 7,000 farms, i.e. 4 million sheep or one-fifth of the UK sheep population.[260] The farmers were told that these restrictions would only last a couple of weeks: the radiocaesium would soon be washed into deeper layers of the ground or locked into the soil and thus would not be taken up into the pasture, and as a result by the grazing sheep. However, this was not the case: levels of radioactivity remained high and although the ban was lifted for most of the restricted farms over the next three months, many farmers would have to live with the restrictions for many years.

The way in which the governmental agencies handled the restrictions on sheep farms wasn't much appreciated by the people most affected by this action: the farmers. A direct source, namely a series of interviews conducted by a research group working under Brian Wynne with sheep farmers from the Lake District (Cumbria, England) in 1986, has recorded their opinions and experiences.[261] What is particularly interesting in these interviews is the way in which many farmers directly connected the events to those of the nearby Sellafield site and the Windscale Fire of 1957, not least because the bans that lasted the longest were imposed on farms located on the hills neighbouring Sellafield. Back in 1957, farmers in the Lake District had been told to dispose of all of their milk, without however being given hardly any information on the accident and its impact. As I demonstrated in the analysis of the early media reporting, the memory of and unease regarding the cover-up of the Windscale Fire was directly evoked by the events of 1986. This dynamic is best

---

[259] These dates are given in A.S. Nisbet and R.F.M. Woodman, *Options for the management of Chernobyl-restricted Areas in England and Wales* (NRPB, 1998).

[260] These numbers are taken from: Wynne, *Sheepfarming after Chernobyl*, p. 14.

[261] Wynne, *Misunderstood Misunderstanding*. This article was re-published under the same title (only an 's' was added in order to turn 'Misunderstanding' into plural) in: Alan Irwin and Brian Wynne (eds.), *Misunderstanding Science? The Public Reconstruction of Science and Technology* (Cambridge: Cambridge University Press, 1996): 19-46. The 1996-version of this article is completed by a 3-pages reflection on the assumptions that had shaped the scientific knowledge of the official experts and on the 'cultural questions' central to Wynne's analysis: trust and credibility. In his analysis, Wynne particularly focused on the interplay of state experts and local framers. The case of the Lake District uphill farmers served as an example to illustrate '*the unacknowledged reflexive capability of laypeople in articulating responses to scientific expertise*.' (p. 301) Wynne's work on the Lakeland sheep farmers has become a classical work within STS. In their famous book *The Golem at Large. What you should know about Technology* (Cambridge: Cambridge University Press, 1998) Harry Collins and Trevor Pinch even chose Wynne's work on Chernobyl and the sheep farmers in Cumbria as one of their seven examples to illustrate the mechanisms of knowledge production in science and technology. However, the topic of sheep farm restrictions is barely known outside the STS-community and the success of Wynne's work has obscured the fact that there were other regions in Britain, too, that were severely affected. This interest in the restrictions on Lakeland farms might be not least linked to the special position the Lake District holds amongst Britons as a nostalgic tourist and outdoor destination.

illustrated by a letter to the editor published on 3 May in *The Guardian*, which asked: '*Sir, am I the only reader who feels better informed about the current disaster at Chernobyl than about the 1957 fire at Windscale with which it is compared? Yours anxiously, Vince O'Connell, London*.'[262] Although the link between Chernobyl and the Sellafield-Windscale complex was made explicit in media reporting,[263] as aforementioned this connection was also noted by the members of the community most directly impacted by these events. Wynne's interviews show that some of the Lake District farmers actually considered the restrictions to be a result of the contamination from the Windscale Fire and the routine discharges from Sellafield. According to their reasoning, the radioactivity levels were only as high as they were because they had been high ever since 1957. The only difference between now and then was that because of Chernobyl, action had now been taken; action that was necessary because of the British nuclear enterprise and not because of the accident in the Ukraine.[264]

Despite their affectedness by the Chernobyl fallout and the particular narrative on Sellafield and Windscale produced by this setting, the farmers in the Lake District did not become a distinct anti-nuclear actor in the Chernobyl debate. Wynne offers a coherent explanation for this fact: '*These more private beliefs were rarely displayed in public, and the farmers refused to confess to such dissent in media interviews. It was made clear to us that one reason for this was that the farmers identified socially with family, friends and neighbours who were part of the Sellafield industrial workforce. They recognized their own indirect and sometimes direct social dependency upon the plant – not only neighbours but also close relatives of the hill-farmers work there. Thus, underlying and bounding their expressed mistrust of the authorities and experts, there was a countervailing deep sense of social solidarity and dependency – of social identification with material kinship, friendship and community networks which needed to believe Sellafield was well-controlled and its surrounding experts credible*.'[265] Thus, the issue of monetary compensation soon became the central issue in the dispute over sheep farm regulations in the Lake District. But this was also true for Northern Wales. Here, the triangular area between Bangor, Conwy and Dolgellau was most affected.[266] As with the Lake District, the restrictions here had led the local population to make a

[262] Vince O'Connell, "Letter to the editor," in *The Guardian*, 3 May 1986, p. 12.

[263] For the way in which media reports linked the sheep farm restrictions in the Lake District with Sellafield and the Windscale Fire, see for example: John Cunningham, "When lamb provides the beef," in *The Guardian*, 23 June 1986, p. 21; Geoffrey Lean, "Nuclear family hunted by a testing legacy," in *The Observer*, 29 June 1986, p. 5.

[264] State experts dismissed this argument by making reference to different isotope ratios of caesium 134 and 137 in the discharges from Sellafield and Chernobyl. See: Brian Wynne, *Sheepfarming after Chernobyl*. The catalogue of the British Library lists a comparative study undertaken by the AEA into the discharges of Windscale and Chernobyl. However, this item is unfortunately missing, and I was unable to consult it in another archive: A.C. Chamberlain, *Comparisons of the emissions in the Windscale and Chernobyl accidents* (Harwell: UKAEA Atomic Energy Research Establishment Environmental and Medical Sciences Division, 1987)

[265] Wynne, *Misunderstood Misunderstanding*, p. 299.

[266] For a map of the restricted areas in Cumbria and Wales, see: Nisbet/Woodman, *Options for the management of*

connection between these measures and the nearby nuclear plant in Trawsfynydd. In Northern Wales, the protests against the government's compensation policy went so far as to farmers blockading the hotel of representatives of the Welsh Office during a visit to the most affected areas.[267]

But unlike the Lake District farmers, the Welsh farmers openly communicated their views on the events to a broader audience. In January 1988, the *Farmer's Union of Wales* published a memorandum on the government's reaction to Chernobyl,[268] addressing it to the Agricultural Committee of the House of Commons. They then used this report as an opportunity to tell their side of the story. The fact that the famers agreed with some aspects of the government's policy could not cover up their harsh criticism of the way this policy had been implemented. Although the Union '*supported the Government's resistance to pressure to institute a slaughter programme*' for the very specific reason that such a measure '*would have further undermined the public image of lamb at that time*,'[269] it openly expressed its resentment of the chaotic situation caused by the unpreparedness of the official institutions. These criticisms were very specific. For instance, there was not enough paint to colour-mark the sheep that had come under the restrictions. Moreover, the fact that the government had plenty of time to get prepared for the situation, given the sheep slaughter occurred in late summer, did not prevent that '*by 26th August there was a total confusion amongst farmers*.'[270] In addition, there was much room for improvement in the payment of the compensations – until mid-December 1986, 1,507,313 GPB had been paid within the framework of the direct loss compensation scheme.[271] In order to provide the House of Commons with concrete answers to the problems, the Union's report concluded with a list of suggestions. The most remarkable was the tenth suggestion, insofar as it reflects that the Farmer's Union of Wales had clearly identified one source of the problem in particular: '*The Government should halt the programme of nuclear power development*.'[272]

Landowners

The issue of sheep farm restrictions was not only of major concern to the farmers but also the land-owners. Once again, it was a group from North Wales that communicated its views to a broader

Chernobyl-restricted Areas in England and Wales, p. 2.

267 Tony Heath, "Farmers take Chernobyl 'hostages'," in *The Guardian*, 5 September 1986, p. 3.

268 Farmers's Union of Wales, *Chernobyl - the government reaction* (Farmers' Union of Wales, 1988).

269 Ibid., p. 6.

270 Ibid., p. 10.

271 Ibid., p. 13.

272 Ibid., p. 17.

public. In 1987 the group published a report,[273] openly criticizing the government's crisis management: '*The experience of 1986 appeared to the population of North Wales to be one of chaos*.'[274] As had the sheep farmers, the landowners blamed MAFF for this mismanagement: '*MAFF's management throughout has been characterised by remoteness. At no time has it sought the practical advice of the farming industry and has consequently earned itself a reputation for evasion and incompetence*.'[275] The report asserted that this mismanagement led to a loss of government authority in risk definition, and as such endangered the British nuclear enterprise: '*People turned to television for their information. This is an unsatisfactory state of affairs because local opinion can be, and is, targeted wherever television programmers choose. At the moment, the target is the power station at Trawsfynydd and the government's nuclear policy. It could equally easily be shifted to any other target*.'[276] The scientific expertise of the government was directly called into question by posing a list of questions: '*Firstly, is there a need for a scientific inquiry? Secondly, how can similar incidents be better managed? These two parts are closely related because the second part implies doubt about the organisational structures at national and international levels and that implies that there is a lack of comprehension of the subject of large scale*.'[277] However, the Landowner's Association was in no way concerned that the risks linked to the fallout had been under-estimated. More than anything, they were concerned that the restrictions were superfluous and aimed only at covering up the government's ignorance.[278] Therefore, the Association called for an independent scientific inquiry, the establishment of a national institution responsible for handling situations like Chernobyl, as well as the creation of an international indemnity fund for trans-border nuclear and chemical accidents. This last recommendation highlights how the landowners, in contrast to the sheep farmers, identified the greatest risks to lie beyond and not within the British borders. Their stance was rendered explicit, when in the report they expressed their concern that, for instance, '*a massive accident in a French Channel reactor could cause immense damage to London*.'[279]

This severe criticism against the government was further excited by the fact that after

[273] Country Landowners' Association North Wales Group, *North Wales Group report on the effects of the Chernobyl accident* (1987).
[274] Ibid., p. 19.
[275] Ibid., p. 9.
[276] Ibid., p. 19.
[277] Ibid., p. 2.
[278] Ibid., p. 16: '*The problems of dealing with the long-term, contaminated peat areas and their side effects are outside the remit of MAFF. Advice to the Ministries concerned can best be procured through a Scientific Inquiry by a qualified committee. The present policy of secrecy is unproductive. […] Government must resist the temptation of banning sheep from grazing the peaty areas in order to overcome the problem. The removal of livestock from these areas will not only have adverse social and economic effects on the communities which derive their livelihoods from the mountain sheep, but also will result in the degradation of the landscape. It must not be forgotten that areas such as the Snowdonia National Park owe much of their beauty and grandeur to the management by farmers*.'
[279] Ibid., p. 20.

restrictions on Welsh farms had been lifted at the end of October 1987, they were re-introduced in July 1987.[280] While the same happened in Northern Wales and Scotland, the restrictions were not lifted at all in the Lake District. The topic of sheep farm restrictions was prominently taken up by British newspapers in the spring and summer of 1987. At the general level they reported on the increasing number of farms and sheep that had come under the ban once more.[281] But they also featured the personal life stories of affected farmers and their families[282] and covered the protest of the farmers from North Wales in Whitehall, who had demonstrated against the government's compensation policies.[283] This protest was accompanied by '*a growing chorus from opposition politicians farmers, landowners and environmental pressure groups for a full inquiry into all aspects of the disaster*' – not least because in some places the records now showed radiation levels that were even higher than the year before.[284]

Anti-nuclear power activists: Friends of the Earth, The Greens, and Greenpeace

The two main environmental pressure groups that were concerned over the way the British government was handling the crisis were *Friends of the Earth* (FoE) and *Greenpeace*. FoE and Greenpeace are the only anti-nuclear power NGOs in Britain that are active nationwide. FoE is Britain's most important environmental NGO. Unlike Greenpeace, it does not have a centralized organizational structure, but rather provides an umbrella name for various independent local groups; the organization has a central office in London. In addition to these two organizations, other various local or regional anti-nuclear power groups in Britain have sprung up, among which *Cumbrians Opposed to a Radioactive Environment* (CORE), or the *Scottish Campaign to Resist the Atomic Menace* (SCRAM).[285] However, they neither gained central importance at the national level nor did they succeed in forming a publicly visible network, all the more evident since the British national

[280] Ibid., p. 34.

[281] See for example: John Ardill, "Chernobyl leaves shadow over 270,000 sheep," in *The Guardian*, 22 April 1987, p. 2; Geoffrey Lean, Tony Heath, David Siddell, "Fell lambs born under N-cloud," in *The Observer*, 3 May 1987, p. 5; Edward Vulliamy and Tony Heath, "Chernobyl controls on sheep extended," in *The Guardian*, 13 August 1987, p. 1; Paul Brown, "Welsh sheep farmers suffer new clampdown over Chernobyl accident," in *The Guardian*, 18 September 1987, p. 2. According to the article *Chernobyl controls on sheep extended* the number of affected farms at the end of August 1987 was 345 in Wales, 69 in Scotland (of which 39 were not yet restricted in 1986), and 150 in Cumbria.

[282] See for example: Micheal Jopling, "Sheep still too hot to handle," in *The Guardian*, 7 March 1987, p. 11; Martyn Halsall, "New controls spur fall-out inquiry call," in *The Guardian*, 15 August 1987, p. 3; Eileen MacDonald, "High radiation levels scar rural families," in *The Observer*, 23 August 1987, p. 6.

[283] See for example: Angella Johnson, "Walker pledges review of Chernobyl claims," in *The Guardian*, 29 September 1987, p. 3.

[284] Tony Heath, "Radiation checks on people in North Wales," in *The Guardian*, 28 September 1987, p. 4.

[285] For an account on the British anti-nuclear power movement, with a focus on the protests in Torness in 1979, see: Ian Welsh, *Mobilising Modernity.*

anti-nuclear discourse – contrary to the French anti-nuclear discourse – focused on military nuclear applications and not on power plants.[286]

In early May 1986, FoE used Chernobyl as an occasion to inform a wider audience about its anti-nuclear stance and, at the same time, to recruit new members and funds. In this regard, FoE ran an advertisement on 6 May 1986 in *The Guardian* titled: '*The accident they said would never happen. Friends of the Earth – Campaigning against nuclear power since 1973. Join us now!*'[287] The same message was communicated via various motifs. An advertisement in *The Observer* a couple of days later offered a more detailed statement, which is worth citing in its entirety: '*A positive message on Chernobyl from Friends of the Earth: It need not happen again. The nuclear accident happened 2000 miles away. Yet we in Britain were still warned not to drink fresh rainwater. What does that say about the likely affects of a similar accident here? And does anyone now doubt that it could happen? Of course we are tempted to say "We told you so," for we warned at the Windscale Inquiry, we warned at the Sizewell Inquiry, we have warned for fifteen years that there was danger in the combination of human fallibility and technology with such unprecedented capacity for environmental harm. But there is no satisfaction in being proved right on this issue. What matters is that a similar disaster in Britain is avoidable as it is at present predictable. Nuclear power amounts to only four per cent of Britain's energy supply. Think about it... all the*

[286] This different focus of the British and French anti-nuclear movements is analysed in: Chafer, *Politics and the perception of risk*. Christopher Rootes has provided a concise summary of British anti-nuclear power activism from its inception up through to the mid-1990s. I quote the full paragraph as it illustrates well the state of British anti-nuclear power activism at the time of the early Chernobyl debate and might be a useful summary for readers unfamiliar with British nuclear history: '*FoE committed itself to arguing the case against the proposed nuclear reprocessing facility at Windscale at the 1976 public inquiry. Some activists saw this a diversion of energies that defused the potential of the environmental movement to influence policy by direct action. Partly as a result, a UK branch of Greenpeace was established and distinguished itself by spectacular acts of protest to draw attention to Windscale's pollution of the Irish Sea. Nevertheless, by comparison with its European counterparts, the anti-nuclear campaign confirmed the moderate character of environmental protest in Britain. Anti-nuclear protest was amplified when in 1979 the Thatcher government envisaged the construction of ten pressurized water reactors. Yet, although the campaign did, at various points during 1978-81, employ the forms of non-violent direct action familiar in Britain since the rise in 1958-63 of the Campaign for Nuclear Disarmament, by comparison with events in France and Germany, protests in Britain were notably small and resolutely non-violent. Indeed, the violence of confrontations in France and Germany inhibited British campaigners from enlarging the campaign of direct action (Welsh 2000: 163). The most confrontational actions were locally intense protests designed to obstruct evaluation of/construction at possible reactor/waste repository sites. These were protests mounted by some of the "350 mixed membership groups actively campaigning on the issue throughout the UK"(Welsh 2000: 185) and at best loosely linked to campaigning organizations such as FoE. The anti-nuclear issue was subsequently deprived of salience when the Conservative government adopted a deliberately low profile approach as it sought to avoid distracting confrontations with environmentalists whilst it concentrated its fire power on the trade unions. The need for additional nuclear capacity evaporated with the arrival of cheap and plentiful North Sea gas, the nuclear power programme was quietly shelved, and so the British environmental movement was deprived of the issue that in continental Europe was the chief stimulus to radical environmentalism. The revival of the peace movement during the early 1980s largely eclipsed the environmental movement and, despite its lack of direct interest in the environment, probably attracted many who might otherwise have been drawn into environmental protest.*' In: Christopher Rootes, "Britain." In *Environmental Protest in Western Europe*, ed. by Christopher Rootes (Oxford: Oxford University Press, 2003), pp. 21.

[287] Friends of the Earth, "The accident they said would never happen," in *The Guardian*, 6 May 1986, p. 31.

danger, all that cost, all the unsolved problems of waste for just four per cent of our energy. When we have 300 years' supply of coal. When we have North Sea Oil. When we have North Sea Gas. When we haven't even started to conserve energy. When we haven't even started to explore alternative energy sources... such as sun, wind and waves. You now know that the human cost of nuclear energy is too high. This is the time to add your voice to ours. Demand that no more nuclear power stations are built. So, join us now. Or at least give us financial support. Someone has to speak on your behalf – we have the expertise and experience to do it.'[288] This text illustrates a central element of British anti-nuclear power protest: Since the successful campaign of British anti-nuclear activists in the late 1970s against the CEGB's and government plans to build a fleet of PWRs,[289] British anti-nuclear power protest had focused on preventing new build projects and not on calling for a phase out of existing plants. This was not least due to the fact that the existing British AGR design was considered less accident prone than the imported PWRs. Another central element of the FoE advertisement – also inherent to British anti-nuclear power arguments in general – is the question of 'costs'. Addressed here as '*human cost*', this issue has been predominantly framed in terms of purely financial costs: Why build expensive nuclear power plants when there are cheaper alternatives available, like gas?[290]

With regard to the question of phase-out there was, however, one anti-nuclear actor who was clearly in favour: *The Greens*. This political party, like FoE, used the occasion to communicate their stance to a wider audience, for instance, in an advertisement run on 8 May: '*Windscale 1957 ... Three Mile Island 1977 ... Chernobyl 1986 ... Who really opposes nuclear power? A growing number of people. And no wonder. Yet ONLY ONE political party stands UNEQUIVOCALLY against nuclear power. Neither sitting on the fence, nor suffering from internal division in this crucial issue. So which is the party to support if you oppose nuclear power? There is only one. The green party. The Greens have ALWAYS sought a nuclear-free future. We'd stop building more nuclear plants. And start closing EXISTING ones. MAKING BRITAIN A SAFER, CLEANER PLACE. And creating thousands of jobs in conservation and renewable energy*.'[291]

To be sure, British anti-nuclear power activists did not consider the accident only as an occasion to publicize their own stance, and garner more support. FoE and Greenpeace also openly challenged the official 'this cannot happen here' narrative by pointing to the insufficiencies in the

---

[288] Friends of the Earth, "A positive message on Chernobyl from Friends of the Earth," in *The Observer*, 11 May 1986, p. 15.

[289] I am thankful to Walt Patterson for providing me with information on the anti-PWR campaign.

[290] This issue will be discussed in more detail in the chapter on the Chernobyl debate of 2006 as it gained central importance within the climate change debate and led to the split of the British environmental movement over the question whether or not nuclear power is environmental benign or 'green'.

[291] The Greens, "Windscale 1957...," in *The Guardian*, 8 May 1986, p. 4.

containment design of British reactors.[292] Furthermore, they called for a full inquiry into the effects of the fallout in Britain. From my analysis of Chernobyl newspaper articles, their positions, however, did not play an essential role in media reporting. Their representatives were not attributed the role of 'counter-experts'. Moreover, if statements of FoE or Greenpeace were cited in articles, they were placed at the very end of the article – which is not a prominent place, considering the fact that the end paragraphs of newspaper articles are often cut to ensure their fit into the page layout.[293]

Campaign for Nuclear Disarmament / European Nuclear Disarmament

Another actor whose statements must to be taken into consideration in order to understand the trajectory of the British Chernobyl debate is the *Campaign for Nuclear Disarmament* (CND). In 1986, the CND was the dominant force in the British anti-nuclear discourse. The campaign had been launched in 1958 and had garnered extensive support for its call for unilateral nuclear disarmament. After a decrease in the number of its activists from the mid-1960s onwards, the CND experienced a major revival in 1979 due to the NATO double-track decision. Not only did hundreds of thousands of people participate in their demonstrations, they were also successful in creating a network of activists who tracked and protested the cruise convoys in Britain – the so called *Cruise Watch* – and in establishing the *Women's Peace Camp* at the Royal Air Force base *Greenham Comman* in Berkshire.[294] Due to the CND's success, British public debate on nuclear issues in the mid-1980s almost entirely revolved around the military use of nuclear technology, and nuclear power plants played more the role of an annex to the military-dominated nuclear enterprise. CND's early communications on the Chernobyl accident conformed to this frame in the way that it was inserted into the British disarmament debate and was not expressed in relation to British nuclear power plants. Two advertisements that the CDN ran in British newspapers, to attract potential new members and donors, nicely illustrate this argument. The headline of the first was '*What if nuclear WAR was just an ACCIDENT*,'[295] while the other read, '*Sellafield Libya Chernobyl. "But mum, will*

[292] In 1987, Greenpeace published the report '*Chernobyl UK*' in which it was argued that a similar accident like the one in Chernobyl could also happen in Hinckley Point B. Unfortunately, I could not procure a copy of this publication. Cutler and Edwards, however, specifically refer to this argument and this publication in their book *Britain's nuclear nightmare* (which I discuss later in this chapter).

[293] Questions regarding how FoE, The Greens, and Greenpeace communicated on Chernobyl in newsletters to their members, press releases or the like, cannot be answered here. The collection of the British Library does not hold any items that match the organizations names with the key word 'Chernobyl' for the period 1986-1988, and my research visits to London did not provide the opportunity for research in the archives of each organization.

[294] I am thankful to Rebecca Johnson for sharing her thoughts on the impact of Chernobyl on the CND campaign. There are various publications on the history of the CND, from inside as well as from outside the campaign. For the early history of the CND, see for example: Holger Nehring, "Cold War, Apocalypse and Peaceful Atoms." For an account from within the CND, see for example its website: http://www.cnduk.org/about/item/437 (last accessed: 15 November 2013).

[295] CND, "What if nuclear war was just an accident," in *The Guardian*, 2 May 1986, p. 27.

there be a nuclear war?" You always meant to join. Fill in the coupon today.'[296] The proliferation issue was used to bridge the gap and connect their arguments to the civil nuclear enterprise as is exemplified by the famous graphic, depicting missiles lurking out of an open reactor, used by the CND in their campaigns following Chernobyl.[297]

Some of the very few remaining anti-nuclear power activists, who had gathered together in the 1970s in the *Anti-Nuclear Campaign*, hoped that Chernobyl would serve to reshape the British anti-nuclear discourse and bring the question of power plants back on the agenda. In this regard, Royce Logan Turner publicly called for a re-launch of the *Anti-Nuclear Campaign*. His article entitled '*Let the campaign roll again*' also included his reasoning as to why the last campaign had ended: '*The campaign fizzled out after a short period, however, partly because the decision to go for another 10 reactors based on the PWR was quietly dropped, but mainly because it was eclipsed by CND. People decided to concentrate on stopping nuclear weapons rather than nuclear power, given the new political circumstances of the time. Cruise, and the deterioration of East-West relations, meant that nuclear bombs became a political issue, whilst nuclear power did not*.'[298] However, Turner's manifesto did not succeed in shifting the relationship between the military and the civil aspects within the British anti-nuclear discourse.

The way in which Chernobyl was framed within the disarmament-dominated British anti-nuclear movement is illustrated by the book '*Something in the wind. Politics after Chernobyl.*'[299] The book was edited by the British anti-nuclear activists Louis Mackay and Mark Thompson. Both were part of the *European Nuclear Disarmament* (END) movement, while Mark Thompson was even one of the central figures of its British division: UK END. In their introduction, Mackay and Thompson outlined the scope of their reflections: '*this book was germinated by Chernobyl, but [its] subject is much wider than that single catastrophe.*'[300] The accident at Chernobyl was almost treated more as a point of departure used to unveil the mechanisms governing the nuclear sector in general, in the USSR, the UK and at the global level. In this regard, Zhores Medvedev's '*The Soviet Nuclear Energy Programme*'[301] was followed by two articles on '*Accidents, Risk and Consequences*' and on '*Secrecy, Policy-Making and the Nuclear State.*' The other two sections of the book compiled general accounts on anti-nuclear and peace movements worldwide and spoke of alternative forms of electricity generation. According to the authors, the secrecy policies instated by various governments with regard to the Chernobyl fallout was a clear indication of how the nuclear system

[296] CND, "Sellafield, Lybia, Chernobyl," in *The Guardian*, 7 May 1986, p. 10.
[297] I am thankful to Ian Fairlie calling my attention to this issue.
[298] Royce Logan Turner, "Let the campaign roll again," in *The Guardian*, 12 May 1986, p. 9.
[299] Louis Mackay and Mark Thompson (eds.), *Something in the wind: politics after Chernobyl* (London: Pluto, 1988).
[300] Ibid., p. 1.
[301] For further information on Zhores Medvedev see chapter 3.1.1.

functioned in general. Furthermore, Mackay and Thompson called into question the reliability of the 'facts' upon which official evaluations of the accident had been based, for example, stating that '*the information provided by the Soviet Union to the 1986 IAEA symposium following the accident was generally regarded as very inadequate*.'[302] The resulting IAEA report and subsequent reports had placed emphasis on the statistically concealed non-existence of health effects rather than carrying out research on the long-term health effects. According to Mackay and Thompson, the concept of 'radiophobia' provided in the IAEA reports to explain the increase in illnesses in the most affected areas conformed to the general communication strategies of the nuclear establishment in the way that it negated the real threats. The intention behind *Something in the wind* was, as defined by the title, to look at Chernobyl from the perspective of global nuclear politics. Therefore, the book did not include specific statements on the health effects of the accident in Western Europe or Britain. Rather, it aimed to reveal the politics that governed the formation of the official narratives. In this regard, the criticism was not directed only at the Soviet nuclear programme. Through its analysis of how Chernobyl had been handled internationally, the authors intended to shed light on the universal structures underpinning the nuclear programme. Therefore, the Chernobyl narrative provided in this book cannot be considered anti-Eastern European/anti-Soviet, but rather anti-nuclear in a way that went beyond the East-West divide. The aspect of self-affectedness (in terms of health effects in Britain) was not addressed at all. With regard to the third category of comparison, the radiophobic-apocalyptic dimension, *Something in the wind* took a clear stance, refuting the concept of 'radiophobia'; yet at the same time it did not elaborate an apocalyptic scenario of the most affected regions.

Thorpe / WISE

Another decidedly anti-nuclear publication that situated Chernobyl within the context of global nuclear politics was the graphic novel *Doc Chaos: The Chernobyl effect* by Dave Thorpe.[303] Thorpe's narration of the broader context of the politics surrounding the Chernobyl accident was quite different from the political scientific analysis provided by Mackay and Thompson. He presented '*the real truth behind the horrors of Chernobyl*'[304] in the form of a sado-masochistic science fiction story that culminated in the explosions at Chernobyl. The storyline was the life story of '*Doc Chaos*': born severely disabled, this character survived only thanks to modern medicine. Having spent the greater part of his childhood in a sterile incubator, the boy – whose personality

[302] Mackay/Thompson, *Something in the wind*, p. 7.
[303] Dave Thorpe, *Doc Chaos: the Chernobyl effect* (Hooligan Press, 1988).
[304] Ibid., back of book.

was warped by this experience – grew to become the negative ideal type of science nerd. The young man, characterized as a mean, arrogant, narcissistic, sexually obsessed, sadistic genius, graduates Oxbridge, henceforth dedicating his life to his dream of ruling the world, exterminating and destroying everything non-scientific, and earning his money by making obscure transplants. This life story, time-wise, paralleled the development of nuclear energy generation: In 1957, for instance, the year of the Windscale Fire, is the year Doc Chaos learned to speak. The author interweaves his narrative of the events that occurred on the eve of the Chernobyl disaster with the life story of Doc Chaos. On the evening of the accident, two plant operators were on duty: Aleksandr Akimov and Anatoly Kurguza. Similarly to Doc Chaos, Thorpe characterized both as being sexually obsessed with the science they worked with. To give the reader an idea of the language Dave Thorpe employed to transmit this sexually charged perspective, I want to give a short quote of the 'thoughts' one worker had while carrying out the test: '*A nuclear power station is the ultimate woman. When she goes critical I think of her as having multiple repeat orgasms. Petra. God what a bitch she can be when she is on heat.*'[305] Thorpe joins the story of Doc Chaos and the events at Chernobyl at the precise moment of the explosions; these explosions were symbolic of the sexual intercourse Doc Chaos had with his wife Jo, the moment when they made their '*own nuclear family.*'

The following chapter was entitled '*Don't call it human error*', and was Thorpe's allusion to the fact that in the story Chernobyl was not an accident but was an event that was inherent to the development of nuclear technology from its inception. But *Doc Chaos: The Chernobyl effect* was not intended to be just an apocalyptic science fiction graphic novel. The afterword by Ayn Lowry and Nicola Ramsden of the anti-nuclear *World Information Service on Energy* (WISE) Amsterdam, an NGO to which the proceeds of the book were donated, clearly stated that the story, for them, was grounded in reality: '*Doc Chaos is the personification of science. At least as it is practised today. A science gone out of control, accountable to no one, responsible to no one. And his/her story […] is macabre, perverted, sadistic, violent, misanthropic and disgusting. But then, so is the nuclear industry. Or to be more accurate, the awful alliance between the nuclear industry and the "destructive monster" that science has become*.'[306]

What is interesting about this interpretation of Chernobyl, of course, is not the account of the course of the events or the reasons for the accident, which is not the central topic of the book. The central topic was made specified in the aforementioned quote from the afterword: the irresponsibility of scientists towards the public. In this regard, *Doc Chaos: The Chernobyl effect* presented a clear counter narrative to the official evaluations of British and international nuclear

[305] Ibid., p. 72.
[306] Ibid., p. 83.

experts because it called into question not only their arguments and figures, but the way they thought about their subject as such.

With regard to the three narrative elements, it is not possible to provide an analysis of the dimensions concerning the health impact of the radioactive fallout, as the account ends in the moment of the explosions. The way in which Thorpe characterizes the plant workers, however, clearly plays with anti-Eastern European/anti-Soviet stereotypes. The focus of his criticism, however, is not directed against the Soviet nuclear programme. The narrative is more far-reaching than these anti-Soviet stereotypes and may be characterized as anti-nuclear in general. But, it goes further than that, exceeding this scope even, and draws on a wider anti-scientific discourse.

France

GSIEN, CRIIRAD, ACRO

In France, too, the statements on the impact of Chernobyl provided by public authorities and actors of the nuclear sector elicited severe criticism. Members of the *Groupement des scientifiques pour l'information sur l'énergie nucléaire* (GSIEN) were the first to publicly challenge the official narrative and evaluation of the accident. GSIEN was founded in the mid-1970s by a group of physicists who opposed French nuclear policies, in particular the large-scale new build project, *Plan Messmer*. As Sezin Topçu phrased it, the aim of founding this group was '*to bring scientific legitimacy to anti-nuclear action and to provide the movement with technical arguments*.'[307] The French anti-nuclear movement was particularly strong in the 1970s and culminated in the protests against the construction of the fast breeder reactor *Superphénix* in Creys-Malville (Isère) in 1977. However, it neither succeeded in reversing nuclear policies nor in weakening the nuclear consensus of the French political and technical elites. The militant anti-nuclear protests of the 1970s were in many regards a sequel to the 1968 protest movement and in this regard, challenged not only French nuclear policies but the French state as such.[308]

In 1986, in reaction to the early news about the accident, the GSIEN linked its interpretation of the events in Chernobyl to a global criticism of French nuclear politics.[309] The public attention

[307] For the history of the GSIEN, see: Sezin Topçu, "Les physiciens dans le mouvement anti-nucléaire : entre science, expertise et politique," in *Cahiers d'histoire. Revue d'histoire critique* 102 (2007): 89-108. The GSIEN can be compared to the American *Union of Concerned Scientists*.

[308] The French anti-nuclear movement, its activists as well as its transnational linkages, has been a prominent topic of research for sociologists, political scientists and historians. For classic works, see for example: Alain Touraine et al., *La prophétie antinucléaire* (Paris: Seuil, 1980); Nelkin and Pollak, *The Atom Besieged*. For more recent publications, see for example: Sezin Topçu, *La France nucléaire*; Rivat, *La transnationalisation de la cause antinucléaire*; Andrew Tompkins, *"Better Active Today than Radioactive Tomorrow!" Transnational Opposition to Nuclear Energy in France and West Germany, 1968-1981* (Oxford: PhD dissertation, 2012).

[309] For the GSIEN's reactions to Chernobyl, see: Topçu, *Confronting Nuclear Risk*, p. 233.

that was directed toward Chernobyl, however, very quickly focused on very precise concerns: Was the radioactive fallout in France perhaps more dangerous than the authorities had claimed? Did it pose a threat to public health? Were French nuclear authorities deliberately lying about there being no real danger? This public concern paved the way for the foundation of the first French 'counter-expert' radioactivity laboratories: the *Commission de recherche et d'information indépendantes sur la radioactivité* (CRIIRAD) and the *Association pour le contrôle de la radioactivité de l'ouest* (ACRO). The novelty of these two organizations lay in the fact that, unlike the GSIEN members, the initiators of CRIIRAD and ACRO were not professionals from within the nuclear sector. As Sezin Topçu has aptly noted, an entirely new dynamic was introduced to the French nuclear discourse: '*Both CRIIRAD and ACRO were created by a majority of "lay-persons" (teachers, doctors, nurses, pilots, farmers, shopkeepers), aided by scientists (biologists and physicists) and technicians (ex-CEA workers, especially in the case of ACRO). Hence, unlike GSIEN in the 1970s, in the case of ACRO and CRIIRAD, scientists were no longer central to the claim for a counter-competence on nuclear risks*.'[310] In the years to come, CRIIRAD and its founding director Michèle Rivasi would play a leading role in the French Chernobyl debate and would dedicate themselves to keeping alive the public memory of the *affaire Tchernobyl*. The role of this actor is more easily described and understood once it is clear how the *affaire Tchernobyl* actually emerged.

French journalists and the 'affaire Tchernobyl'[311]

In the days immediately following the accident, the statements released by the representatives of the SCPRI, IPSN and EDF dominated French media reports on Chernobyl. Journalists had turned to these authorities in order to obtain information on the impact the accident would have in Eastern as well as in Western Europe. The explanatory pattern used by these agencies – to criticize other countries for their overreaction and at the same time to stress that there was no reason to worry about the radioactive fallout in France – had been transmitted 1:1 to the French public. However, at the end of the first week of May, progressively more journalists began to wonder why on the other side of the Rhine, in Germany, protective measures had been instated and even intensified while in France their interview partners continued to insist that everything was completely fine. In this regard, for instance, in an article published on 9 May 1986 in *Libération*, the author speculated that '*it would, however, be extraordinary if Alsace and Lorraine, like a paradisical island, totally escape this fallout that is so important just some kilometres further away*.'[312] Also in this period more

[310] Ibid., p. 235.
[311] This paragraph is an adaption of the accordant account in: Kalmbach, *Tschernobyl und Frankreich*, pp. 72.
[312] Vincent Tardieu, "L'état de l'hexagone après le nuage," in *Libération*, 9 May 1986: '*Il serait tout de même*

journalists had begun to criticize the way the SCPRI and the nuclear sector were providing them with information. One journalist, Hélène Crié, in her articles for *Libération,* was particular blunt with her criticism and framed it in a general attack on the structure of the French nuclear sector: '*The most nuclearized country in the world, France, is the most avaricious too with regard to information. Even when the accidents don't take place on her soil. […] However, it is not the competent and official authorities that are lacking. But, as soon it comes to obtaining the slightest information, you run against a wall. […] With regard to nuclear, three partners communicate between each other, but only between each other: the constructors, the operators and the public authorities. […] The only experts that are capable providing information on the risks belong to the family that produces this type of energy.*'[313] To palliate this growing number of statements criticizing French nuclear policies, the public authorities chose to adopt a strategy of providing clear counter statements. The press communiqué released by the French Minister of Agriculture on 6 May exemplifies this strategy: '*The French territory, because of its distance, was completely exempted from the fallout of the radionuclides consequent to the accident at the Chernobyl plant*.'[314] However, these unrealistic statements only instigated more public speculations on the 'true impact' of Chernobyl in France. In order to put an end to these speculations, Pierre Pellerin appeared in a TV interview on 10 May. In the show *13 h* on channel *TF1*, he presented a map that indicated the quantities of radioactivity that had come from the Chernobyl fallout over continental France.[315] Monique Sené, the president of GSIEN, had been invited to speak on the same show. At the start of the show she had a serious argument with Pellerin about the protective measures that had been implemented in Italy and West Germany. She claimed the instated measures were justified, a statement Pellerin did not at all agree with. Furthermore, Sené then accused Pellerin of having withheld information; an accusation Pellerin refuted by pointing to the more than 200 Telex the SCPRI had sent out to journalists, politicians and others since news of the accident had been communicated to them. After this argument, the talk show hosts asked Pellerin to present the maps that indicated the intensity of radioactivity the SCPRI had measured in France in late April and

extraordinaire que l'Alsace et la Lorraine, comme un îlot paradisiaque, échappent totalement à des retombées aussi importantes à quelques kilomètres de là.'

313 Hélène Crié, "La France, lanterne rouge européenne de l'information," in *Libération*, 9 May 1986. Translation by the author: '*Pays le plus nucléarisé d'Europe. La France est aussi le plus avare d'informations. Même lorsque les accidents ne se produisent pas sur son sol. [...] Ce ne sont pourtant pas les instances compétentes et officielles qui manquent. Mais, dès qu'il s'agit d'obtenir le moindre renseignement, on se heurte à un mur. […] Pour le nucléaire, trois partenaires communiquent entre eux, rien qu'entre eux: les constructeurs, les exploitants, et l'autorité étatique. […] les seuls experts capables de renseigner sur les risques appartiennent à la maison qui produit ce type d'énergie.*'

314 Cited in: Vincent Tardieu, "La France miraculée," in *Libération*, 7 May 1986: '*Le territoire français, en raison de son éloignement, a été totalement épargné par les retombées de radionucléides consécutives à l'accident de la centrale de Tchernobyl*.'

315 TF1, Interview with Pierre Pellerin, in *13 h*, 10 May 1986. Transcription and translation from the original recording held by the INA by the author. Presentation of the map from minute 21 onwards.

early May. And Pellerin obliged: He showed a map for every single day, from April 28 to May 5. These maps were followed by another map indicating the total deposition of radioactivity for each region. All the data were measured in the unit *Curie*, a fact that Monique Sené directly criticized as an attempt to render the evaluation of these data more complicated seeing as the *Becquerel* had become a more standard unit of measure. While Pellerin presented his maps, the show host interrupted him to ask how much these levels were above the normal background radioactivity. Pellerin's answer that in some local spots, the radioactivity had been up to 400 times higher than normal was commented upon by his interviewer with the exclamation: '*These are numbers that we discover today!*' But as with his first Chernobyl interview on 29 April, Pellerin paid very little attention to the interruptions of others and continued his presentation. However, this sentence '*These are numbers that we discover today!*' was the statement people remembered about this interview, which can be considered as the starting point of the *affaire Tchernobyl*. After the TV interview, many people reached the conclusion that the radiation protection experts and the government, over the last two weeks, had lied to the French public and covered up the true amount of radioactive fallout that had hit France. And in doing so, these authorities had put French public health at risk. Some journalists felt personally betrayed, especially since it was they who had passed the message to the their audience that there was no need for any protective measures to be taken. So what would happen if it indeed turned out that the reactions and measures taken in other countries had been appropriate, while in France the stance to maintain the status quo had placed the French people's health at risk?[316]

On 11 May, the day after the interview with Pierre Pellerin had been broadcasted, the French Minister for the Environment, Alain Carignon, was confronted in a news show on channel *Antenne 2* with the accusation that state authorities had purposefully withheld important information. The show's host opened the interview with the question: '*How do you explain the fact that the French have been so badly informed in this affaire, because we journalists, we tried to obtain information on these issues and we were given the wrong information*.'[317] Carignon refuted this allegation and declared that all the data had been available before, the only new element was that the SCPRI had assembled the data into one single map removing the background radioactivity. However, the news host insisted that these data had not been available to the public, asking Carignon: '*How do you explain that the French never knew about them.*'[318] But Carignon parried this question with the

[316] For further reflections on the reasons underlying the reactions of French journalists, see: Kalmbach, *Tschernobyl und Frankreich*, p. 75.

[317] A2, Interview with Alain Carignon, in *MIDI 2*, 11 May 11 1986. Transcription and translation from the original recording held by the INA by the author: '*Comment expliquez-vous que les Français étaient si mal informés dans cette affaire parce que nous, journalistes, nous avons essayé de savoir et on nous a donné des informations fausses*.'

[318] Ibid: '*Comment expliquez-vous que les Français ne l'ont jamais su?*'

reply: '*I beg your pardon, but it is the task of the media to collect these numbers*.'[319] The question as to who had access to which data was not resolved in the interview, nor was it ever, even to this day. Instead, a *cellule de coordination de l'information* was created in order to prevent further 'misunderstandings' between the French nuclear experts and journalists should a nuclear accident ever occur again. In this regard, the French authorities had identified in its communication with the public the area that needed improvement and that needed to be re-evaluated. After all, Pierre Pellerin and his colleagues were scientists and not public relations managers. Had there been better communication with the media, the whole *affaire Tchernobyl* would never have emerged. State officials, however, never called into question their stance on the radioactive fallout. Carignon's declaration in the interview that '*these amounts are not dangerous*'[320] perfectly conformed to this position.

The fact that the French government and nuclear authorities saw no reason to re-evaluate their position that the fallout in France was not dangerous and that protective measures were unnecessary, however, did not mean that everybody else felt the same. On Monday, 12 May, after Pellerin and Carignon had given their statements on TV over the weekend, newsstands all over the country displayed the headline printed on the front page of *Libération*: '*The radioactive lie*' and, below, the statement: '*The public authorities in France lied, the radioactive cloud of Tchernobyl did indeed fly over a part of the Hexagon: Professor Pellerin in fact admitted it two weeks after the nuclear accident*.'[321] On TV, as well, the news anchors continued to state that they had not received the correct information from the public authorities. A news show on channel *Antenne 2* informed its audience that '*Between April 1 and 4, not even a single official communiqué. On these dates, the cloud advances and swells over France. […] With no particular information, no media reports on this cloud.*'[322] After the fourth, however, Pierre Pellerin had provided the information that the cloud had moved on, but nothing had been said about levels of radioactivity on the ground: *'Reassuring comments, but we have not been given any data*.'[323] Thus the *mensonge de l'état* ('the state lie') narrative of Chernobyl was born. Moreover, the person responsible for putting put the French public at risk had been directly identified as well: Pierre Pellerin. The fact that Pellerin in the TV interviews had not come across as a particularly nice and empathetic person but had appeared to be

[319] Ibid: '*Excusez, c'est aux médias de récupérer ces chiffres.*'
[320] Ibid: *'[…] les taux ne sont pas dangereux.*'
[321] Libération, cover page, 12 May 1986: '*Les pouvoirs publics en France ont menti, le nuage radioactif de Tchernobyl a bien survolé une partie de l'Hexagone: le professeur Pellerin en a fait l'aveu deux semaines après l'accident nucléaire*.'
[322] A2, "Tchernobyl: rétro des mensonges," in *A2 Dernière*, 12 May 1986. Transcription and translation from the original recording held by the INA by the author: '*Entre le 1er et le 4 mai aucun communiqué officiel. A ces dates le nuage évolue et gonfle sur la France [...] Sans information particulière, aucun média ne reparle de ce nuage.*'
[323] Ibid.: '*Commentaires rassurants, mais on nous donne aucun chiffre.*'

rather arrogant and gruff helped to create the portrayal of him as 'the bad *nucléocrate*'. Media reports were replete with accusations against Pellerin and speculations as to who was involved in this French state plot against its own people.[324] One possible motive for this secrecy policy quickly surfaced: the government had wanted to prevent the French agricultural sector from being hit with bad publicity: rumours about radioactive contamination of French foodstuffs could have had disastrous consequences for its export sector. In this regard, the regional newspaper *Les Dernières Nouvelles d'Alsace* wrote on 12 May, '*the consumer might get the feeling that the interests of the French farmers have been set above the general interest.*'[325] But journalists did not stop at placing the blame on specific individuals for having made the wrong decision. They inserted the *affaire Tchernobyl* into the wider context of the French nuclear sector – its structures and how it functioned – and its entanglement with the French state. Thus, they used the occasion of Chernobyl to criticize the French nuclear techno-political regime as a whole. The notions of 'disinformation' and 'secrecy' in particular heavily drew on the 'nucleocratic' frame, which constituted a central topos of French anti-nuclear criticism.[326] A particularly telling example of this is found in an article published on 13 May in *Libération*, where the recent events were framed as follows: '*Since the start of the adventure in 1956, France has placed herself resolutely in the heart of secrecy. Sometimes even escaping the politicians, the atom is the privilege of a few great engineers who graduated from X [short for Ecole Polytechnique] and mines [short for École des Mines]. […] From the beginning, the 'X-mines' had a hold on the atom, which turned into a family affair, i.e. an affair of corps and clan. Pierre Guillaumt [*[327]*], their president, always carried with him a little notebook with the names of the corpsard (ingénieurs des mines). He himself placed them in the state apparatus, applying unwritten but terribly subtle laws*.[328] It was without doubt that articles from the left wing press framed the *affaire Tchernobyl* in an anti-state manner. Another example is the article of 12 May in

[324] This dispute was noted and observed from abroad as well. For instance, the British newspaper *The Guardian* reported on the ongoing dispute in France in an article on 12 May: Campbell Page, "'Information withheld' on radioactivity in France," in *The Guardian*, 12 May 1986.

[325] Les Dernières Nouvelles d'Alsace, "Polémique sur l'information nucléaire en France," 12 May, 1986: '*Le consommateur peut avoir le sentiment que les intérêts de la paysannerie française ont prévalu sur l'intérêt général.*'

[326] *Nucléocratie* is a specific French adaptation of the term *technocracy*. The term is used in a rather negative way to refer to the group of people holding certain key positions in the French nuclear sector and includes both the engineering as well as the administrative/policy side. The term was shaped by French economist and journalist Philippe Simonnot, *Les nucléocrates*.

[327] Pierre Guillaumat, was an alumnus of the *École Polytechnique* and an *ingénieur des mines*. He was also president of the CEA and later of the EDF and was Minster of Defence. Thus, he served as the ideal type of a *nucléocrate*. For his biography, see: Pierre Lucien Jean Guillaumat (1909-1991) (website of the *Annales des Mines*): http://www.annales.org/archives/x/guillaumat.html.

[328] Jacques Chiquelin, "Le clan de l'atome français," in *Libération*, 13 May 1986: '*Depuis le début de l'aventure en 1956, la France s'est résolument placée au coeur du secret. Echappant même parfois aux politiques, l'atome est le privilège de quelques grands ingénieurs sortis de l'X et des mines. Dès le départ, les 'X-mines' ont fait main basse sur l'atome, devenue une affaire de famille, c'est-à-dire de corps, de clan. Pierre Guillaumat leur président, avait toujours sur lui un petit carnet avec les noms des corpsards (ingénieurs des mines). Il les plaçait lui même dans l'appareil d'Etat en appliquant des lois non écrites mais terriblement subtiles.*'

Rouge, a magazine published by the *Jeunesse communiste révolutionaire* (JCR), that described the group responsible for the secrecy surrounding the impact of Chernobyl in France as a '*caste of conspirators graduated from the Grandes Écoles, Polytechnique, les Mines etc., the masters of nuclear.*'[329] In this regard, the very strong anti-state sentiment that characterized the French anti-nuclear movement of the 1970s was promptly revived during the *affaire Tchernobyl*. Furthermore, this stance found in Chernobyl an outlet from which to express itself after the French anti-nuclear movement had lost momentum at the end of the 1970s.

The left-leaning media, however, was not alone in criticizing the French government and the nuclear authorities for how they had handled Chernobyl. The topic of a lack of independent expertise in the French nuclear sector was, for example, also addressed in an article in *l'Express*: '*What will be changed by this new cellule put into place by Alain Madelin? Rigorously nothing. Not a single independent scientist, not one syndicalist, not one ecologist, not one specialized journalist will be part of it.*'[330] This gap, however, would come to be filled by the new 'counter expertise' that had emerged within the context of the *affaire Tchernobyl*: CRIIRAD and ACRO. It is for this reason that their statements gained such prominence in the further development of the French Chernobyl debate. Furthermore, not quick to forget how they had been – in their opinion – misled by the state experts, journalists no longer relied exclusively on the national radiation protection agencies for their information, but now also turned to these 'counter experts' when reporting on radiation issues.

The following section on the individual interpretations that gained a voice in the public arena will conclude this chapter on the direct reactions to and early narratives of Chernobyl.

1.1.4 Individual voices

This section will be exclusively dedicated to British publications. As far as I have been able to discern, there were only a handful of books on the topic of Chernobyl published in France during the two years that followed the accident, of which the only two that received further attention were *Tchernobyl-sur-Seine* by Hélène Crié and Yves Lenoir and *L'affaire Tchernobyl* by Yves Lecerf and Édouard Parker. However, these publications were publicly associated with specific pro- or anti-nuclear actors and therefore are not considered the contribution of individual voices to the

[329] Michel Morel, "L'état français a déjà fait le choix du tout-nucléaire," in *Rouge*, 15 May 1986: '*[…] caste de conspirateurs sortis des grandes écoles, Polytechnique, les Mines, etc., maîtres du nucléaire.*'

[330] Yves Guihannec, "Nucléaire: les silences de la France," in *l'Express*, 16 May 1986: '*Qu'y changera la cellule mise en place par Alain Madelin? Rigoureusement rien. Pas un scientifique indépendant, pas un syndicaliste, pas un écologiste, pas un journaliste spécialisé n'y figurera.*'

Chernobyl debate.[331] Naming this sub-chapter '*Individual voices*' does not imply that individual agency did not play a role with regard to the actors analysed in the previous sections. Lord Marshall of Goring, Pierre Pellerin, Monique Sené, and many others indeed acted as individuals in the Chernobyl debate, and, driven by their personal convictions, considered it important to transmit their evaluation of Chernobyl to a broader public. At the same time, these people were, especially according to public perception, closely associated with a certain institution or organization: Lord Marshall of Goring with the CEGB, Pierre Pellerin with the SCPRI and Monique Sené with GSIEN. The actors of the Chernobyl debate that will be discussed in this section, however, do not represent any institution in particular. Though they may, of course, (or have been at one time) associated with a certain interest group or organization, in their public appearances they did not act as spokespersons. Moreover, in their publications, they did not refer to specific institutions, as did Louis Mackay and Mark Thompson, or Dave Thorpe. For all these reasons, this actor cluster has been denominated '*Individual voices*'. It is quite interesting to note that in Britain, these individual voices existed, whereas in France the debate was directly taken over by the usual actors active in the general nuclear debate, actors who clearly situated themselves either in the pro- or in the anti-nuclear camp. In this regard, the early Chernobyl debate in Britain was more open than in France in the way that it integrated a broader spectrum of actors.

Britain

Richard F. Mould

One such individual voice in the British Chernobyl debate is that of Richard F. Mould. Mould published his first book on Chernobyl in 1988. For this popular science publication, he chose the title *Chernobyl. The real story*.[332] One motivation for the detailed analysis that follows of this book in particular is that it would go on to be quoted in many of the subsequent British Chernobyl publications. Mould presented himself to the reader as a neutral expert, capable of delivering a trustworthy judgement of 'what really happened'. Leaving no doubts as to his intentions, the opening sentence of his preface read: '*Now, what I want is Facts*' and clarified: '*My objective in writing this book was to produce an historical account of what happened before, during and after the accident, rather than embroiling myself in the political arena over Chernobyl's implication for the environmental issue.*'[333] The contradiction inherent in this statement, for which an '*historical*

[331] These two books, one written from an anti-nuclear perspective – Yves Lenoir has been one of the key figures of the French environmental and anti-nuclear movement – and the other written from a pro-nuclear perspective, are analysed and compared in: Kalmbach, *Tschernobyl und Frankreich*, pp. 83.

[332] Richard F. Mould, *Chernobyl: the real story* (Oxford: Pergamon Press, 1988).

[333] Ibid., p. ix.

account' to be accurate would incorporate statements on '*the environmental issue*', even if only to present the sequence of events as they unfolded, was completely glossed over. Instead, Mould tried to include '*as much photographic evidence as possible*' in his book – starting with photos of himself visiting the Chernobyl plant in 1987 – because he believed that this was the way to present his audience with a neutral assessment of the events. That some of these pictures could be considered propagandistic material provided by the Soviet state authorities rather than neutral 'copies of reality' will be discussed in more detail below.

Mould considered his authority as a neutral expert to derive from his profession and therefore described himself as '*an internationally known medical physicist, cancer statistician and radiation historian. As well as serving as a technical expert to the World Health Organisation and the International Atomic Energy Authority, [I] was a United Kingdom Government delegate to the IAEA Chernobyl Post-Accident Review meeting in Vienna, 25–29 August 1986*.'[334] Apparently, this statement was convincing, because in the years to follow, Mould's book figured in numerous British Chernobyl bibliographies, including research publications that listed only nature science papers and reports.

The first few pages of the book consisted of a technical description of the Chernobyl nuclear power plant; several paragraphs on Kiev underlining the fact that the town had luckily been saved from the worst of the fallout and that the river Dnieper '*was not contaminated*'; and a minute-by-minute account of how the accident unfolded. The series of photos that were inserted just after this section provided a somewhat particular narrative in and of themselves. The first photo showed the lively and well kept main street of Kiev in 1986, whereas the picture bellow showed this street in 1943 after its destruction during World War II, to which was attached the corresponding caption: '*This is not a nuclear landscape, but the aftermath of the German invasion of the Ukraine during World War II*.'[335] The next page showed a smiling wedding couple in the streets of Kiev in May 1986 – no caption was included here, and therefore, no information imparted to the reader regarding, for instance, the fact that the people of Kiev in May 1986 had not been warned or told of the high levels of radioactivity in the air. By allowing these pictures speak for themselves, as the author wanted them to do so, they told the story of a town that had not been affected at all by the Chernobyl fallout, but had lived through disasters that were on a scale incomparable to this accident, disasters that had nothing to do with radioactivity but with German belligerence. Throughout the chapter, there are several more photographs that – through their interplay with (missing) captions – imply a particular narrative. For instance, one photograph captured a group of

[334] Ibid., p. 256.
[335] Ibid., p. 23.

workers as they were preparing for their shift on the reactor roof. The caption below the image read: '*the protective suits are constructed of lead and rubber*'.[336] The important additional information that these suits often were taken off since the workers could barely move in them was neither provided by the caption under the picture, nor in the main text. Mould did not overlook, however, the devastating side of the accident, which was illustrated by photos of the firemen who had been brought to Moscow and that revealed them lying in their beds, bald and with black spots all over their bodies.[337] Yet, the imagery did not form a coherent narrative and was completed with rather peculiar pictures such as, in one instance, a photograph of a bottle of Ukrainian vodka with the short description: '*Original firewater prepared according to selected traditional Ukrainian recipes form spirit of the highest quality with addition of natural honey and blackcurrant. Refrigeration is recommended before use.*'[338] Mould left it to the reader to decide the way in which this item ought to be included in the narrative of the accident.

The next chapter, '*The Victims*', begins by giving a broad definition of the term 'Chernobyl victim': Mould in fact elaborated that not only the 31 direct fatalities had fallen prey to the accident, but that '*the 135,000 evacuees from the 30-kilometer zone and the people who eventually will be included in the number of excess cancer deaths statistics are also victims of the disaster, as I suspect will be some national nuclear power plant programmes for the production of electricity.*'[339] The severe health effects resulting from the radiation exposure were presented as having been limited to those who had been at the site of the plant: '*299 were diagnosed as having radiation syndrome, but these cases were confined to firemen and plant workers and there were none in the general population*.' As for the worries about other kinds of health effects, Mould treated them as though they were unfounded or even ridiculous: '*There were recorded cases of people diagnosing themselves as having radiation sickness when all they had was a stomach upset. More unusual stories included the vegetarian who survived 3 days by eating only peanuts, the lady who wanted to know if she should dodge rainspots because of radioactive fallout, and the newly returned visitor from Eastern Europe who wanted to know if he was radioactive because an Eastern European lady had recently been breathing heavily on him*.'[340] An anecdote about the IAEA conference in Vienna in August 1986, which Mould had attended, also conformed to this stance: '*Some Soviet officials were against the idea of a visit of Dr Hans Blix, Director General of the IAEA, and gave as their reason that they "were worried that the radiation might harm Dr Blix's organism"*'.[341] Apparently, this

[336] Ibid., p. 35.
[337] Ibid., p. 61.
[338] Ibid., p. 48.
[339] Ibid., p. 63.
[340] Ibid., pp. 63.
[341] Ibid., p. 64.

exaggerated fear had raised '*a certain amount of laughter*'[342] among the assembled group of Western radiation experts. Mould's closing remark to this chapter that '*not all of the irradiated firemen victims died*'[343] was finally designated to add yet another example to his argument that the health effects of the accident were not as devastating as many people seemed to believe. To have come up with such exaggerated ideas, people simply had to have been far too influenced by the media reports which had seminated panic. Therefore, '*one of the resolutions following the accident should be to educate the general public, as far as possible, on radiation risks and benefits (the benefits of radiation treatment and diagnosis in medicine should not be forgotten)*.'[344] The photos that were used to illustrate this chapter underpinned Mould's narrative that health effects were rather limited. The series of pictures started with a portrait of '*one of the oldest evacuees*', happily smiling, like the others in the photo. The same happiness and easiness was present in the next photograph, too, which depicted evacuated children in '*a summer camp*'.[345] The subject of 'happy, healthy evacuees' was again revisited at the end of the photo series in a picture that showed a group of smiling people inaugurating a new settlement for the clean-up workers.[346] Of note here are also the pictures of the firemen that had survived the accident: a group of smiling middle-aged men standing in the sun outside a rehabilitation centre. The caption provided an explanation for why some of the men were wearing hats: '*The caps cover bald scalps which have been shaved as part of the decontamination process.*'[347] This is indeed a surprising explanation seeing as theses men had just lived through a radiation sickness that induced severe hairloss. Not less surprising is the caption of the next picture which depicted three of the Chernobyl firemen on exercise machines: '*Lung capacity of the firemen could well have been impaired due to inhalation of smoke, dust and dirt.*'[348] Not a single word, however, was uttered about the health effects of the radionuclides they had inhaled. The degree to which much Mould himself believed in these photographs, or wanted to believe in them, can be deduced from a comment he wrote in the chapter on the evacuations. A '*photograph [that] showed seven of the babies all well wrapped up from head to toe, like Russian dolls, with only their little faces peeping out!*' provided for him the proof that these babies born to evacuated mothers were all doing well.[349]

Of the other chapters, which addressed the '*decontamination of the environment*', '*the entombment of the reactor*' and '*the food chain*', it is of interest to more closely examine the last. In

[342] Ibid.
[343] Ibid., p. 72.
[344] Ibid., p. 64.
[345] Ibid., p. 77.
[346] Ibid., p. 112.
[347] Ibid., p. 105.
[348] Ibid.
[349] Ibid., p. 75.

this chapter, Mould listed the radiation levels observed and the counter measures taken in various European countries. His remarks with regard to the UK were rather short and included the statement that '*levels in milk are below the recommended levels at which restrictions on milk supplies would be considered in the United Kingdom*.'[350] While this was not inaccurate information, it is interesting that Mould failed to mention even once the radiation levels that had been registered in the sheep meat. After all, at the moment of publication, hundreds of sheep farms in the UK were still subject to the restrictions that had been put into place shortly after the Chernobyl accident because the animals were still too radioactive to be sent to market.

Like the authors of the Watt Committee report, Mould considered the Chernobyl accident above all to be an interesting object for natural science research. In this regard, he added to his account on the babies born to evacuated mothers: '*It is to be hoped that all these babies will receive medical follow-ups for the rest of their lives. This will ensure, not only that they will promptly receive any necessary treatment, but it will also provide extremely valuable data for the future on the effects of low-level radiation doses.*'[351] Although Mould stressed that there were still many unknowns regarding the long-term health effects of Chernobyl, he considered the death toll estimation given in an IAEA report dating from August 1986 – a report written by Dan Beninson, Director for Licensing Nuclear Installations in Argentina – to be the most trustworthy and even quoted it: Beninson had calculated 2,000 excess deaths and put this number directly into relation with the health impact of naturally occurring background radiation.[352]

In summary, the narrative Mould presented in *Chernobyl: The Real Story*, emphasizes the position that the people's fear of radiation and the possible health effects was an exaggeration. The implicit belief was quite clearly conveyed that though the Chernobyl accident had caused many deaths – each one was one too many – people had to learn to better put these deaths into perspective, for the simple reason that: '*like it or not, civil nuclear power remains the only viable alternative for the foreseeable future*.'[353] The fact that this statement was inserted only at the end of the book is misleading. In fact, Mould did not deduce this conclusion from the information presented. Instead, the 'facts' he presented were organized according to the underlying assumption that, in the end, the impact of the Chernobyl accident could not have been so terrible nor so terribly shocking because we had accepted to live with its consequences when we entered the nuclear age.

When Mould's narrative is analysed for the presence and weight assigned to the three main components – self-affectedness, radiophobia versus apocalypse, and anti-Eastern European/anti-

[350] Ibid., p. 128.
[351] Ibid., p. 76.
[352] Ibid., p. 192.
[353] Ibid., p. 180.

Soviet stereotypes – it is quite clear that the first, self-affectedness, plays no role in Mould's account. This is particularly evident given the fact that Mould did not even deem it important to mention the restrictions on British sheep farms. Anti-Eastern European/anti-Soviet stereotypes, however, are a clear part of his narrative: the photograph of the vodka bottle is a telling example. In addition, the way in which Mould portrayed the evacuees provided a picture of them as a strong natured but simple (minded), rural and traditional people who willingly did what they were told. Mould played on this stereotype in order to prove his point that the health impact of the accident was rather limited: the little Russian children and baby 'dolls' looked so healthy and prosperous, so what could possible be wrong with them? In general, Mould's account on the health effects was far from apocalyptic. The apocalypse for Ukraine had not been Chernobyl; it had been the German occupation during World War II. When the ruins of Kiev in the aftermath of World War II are compared to images of Kiev and the new towns built for the evacuees following the Chernobyl accident, happy smiling faces can be seen filling the decorated streets. Like the British authorities and actors of the British nuclear power industry, Mould identified the need to better educate the public about the true scale of risks of ionizing radiation and its benefits to be the main conclusion that was to be drawn from the Chernobyl accident. At no point did he call into question the nuclear programme as such and actually considered nuclear power production to be a given fact to which people simply had to adapt. Mould's self-promotion as neutral nuclear expert was willingly taken up by many people who shared his evaluation of Chernobyl. In this regard, referring back to Mould's book provided the illusion of using an independent, neutral source that was not informed by an inherent pro-nuclear point of view. However, the underlying assumptions that shaped Mould's account were far from neutral and were indeed very much pro-nuclear.

Hamman / Parrot

Mould was not the only individual voice in this debate, nor was his stance in support of the narratives released by the state authorities and nuclear sector the only stance. Others partook, calling into question these official narratives and to shed light on the dynamics and power structures at play in the formulation of these evaluations. One of the earliest of these 'counter narratives' was the book *Mayday at Chernobyl* by Henry Hamman and Stuart Parrot.[354] The London-based journalist of Radio Free Europe and the specialist of Eastern European history and politics presented a critical assessment of the reports published thus far by the official institutions. From the outset, the opinion of the two authors was evident with regard to the emergency measures adopted

[354] Henry Hamman and Stuart Parrott, *Mayday at Chernobyl* (Sevenoaks: New English Library, 1987).

by the various governments: '*The drifting winds spread the fallout across Europe even as politicians and nuclear power supporters insisted that there was no real danger*.' The aim of the publication, however, was not to offer a concrete counter-evaluation to the official statements, but to cast light on the context within which the Chernobyl narratives of the international nuclear community had been generated. The author's oft-sarcastic approach was an attempt to direct attention to the implicit immorality of many of these official statements. A telling example lies in their comment on what so many radiation scientists had professed an interest in, i.e. the 'positive learning opportunity' that Chernobyl had provided them with: '*The explosion of the American atom bombs at Hiroshima and Nagasaki provided scientists with an unique opportunity to study the devastating consequences of exposure to radiation and the effects of radiation sickness. Now, the accident at Chernobyl will also provide unique opportunities for study and research*.'[355] In order to give readers an overview of the aspects relevant to the Chernobyl debate, the range of topics touched upon in the book discussed the nuclear history of the USSR; how the accident had been covered up by the Soviet government and media; the dispersion of the radioactive plume; and the widespread fallout. Moreover, an entire chapter was dedicated to the 'liquidators'. As for the available data on Chernobyl's health impact, Hamman and Stuart included as many sources as possible and duly noted any areas in which knowledge was still vague or patchy. In their detailed account of the low-level radiation debate and the different points of views, rather than presenting 'their own truth', they concluded that '*the effect of low level radiation exposure is one of the most politically charged issues in science.*'[356] The authors applied the same neutrality when communicating information on the death toll: They presented different estimations but did not provide their 'own' figures. Rather, their description contained general statements and quotes, among which: '*Radiation biologists said many other people will die prematurely in the years ahead, not only in the Soviet Union, but across Europe*.'[357]

Despite their remarkably balanced account on the health impact of the fallout, Hamman and Stuart did not refrain from taking a clear stance on the way in which the states had carried out their risk management measures. This is especially true with regard to their chapter '*No one thought it could happen*'. Their account of the events, for the Soviet Union as well as for Western European countries, stood in direct contrast to narratives provided by the various actors of the British nuclear sector which had, as shown above, praised the USSR's emergency action as well as how they themselves had handled the situation. The perspective provided by Hamman and Stuart differed enormously: '*The nuclear accident caught European governments by surprise, and their response*

[355] Ibid., p. 151.
[356] Ibid., p. 170.
[357] Ibid., p. 158.

was slow and confused. The problem everywhere was inadequate planning.'[358] The unpreparedness of the governments is what led, according to the two authors, to their adoption of tactics and strategies to cover up this incompetence; this was particularly true for Belgium and France.

But Hamman and Stuart did not limit their criticism to individual national governments. Rather, they analysed this action, or non-action, within the bigger framework of nuclear politics that had been cultivated by the IAEA. In their chapter '*Atomic Politics*' they conveyed a detailed interpretation. According to Hamman and Stuart, the IAEA was '*not meant to be a neutral inspectorate or regulatory board but a nuclear energy promoter and a forum for nuclear power vendors to display the plants they have to sell*.'[359] In this regard, in the immediate aftermath of the accident, the task of the IAEA had been nothing less than to save the nuclear industry as a whole. To this end, intensive behind-the-doors politics were undertaken during the summer of 1986 in order to find an official narrative that suited everybody; it was a narrative that was central to the Chernobyl accounts that had been released by the various actors of the British nuclear sector. The argument, with its logical progression, offered by Hammam and Stuart is worth quoting in detail: '*The crucial battle was the one between the Soviet Union and the Western nuclear powers. The struggle was over the question of placing the blame for the Chernobyl accident. The Western nuclear strategy was clear from early on – to argue that the Soviet nuclear programme was both different from and inferior to Western programmes. In the halls around the IAEA board room, the word went out from the French, the West Germans, the British and the Americans that the RBMK was a badly designed reactor that lacked containment and could not be licensed in the West. A French delegate said that the goal in his mind, at least, was to make sure that when people looked at the Chernobyl accident they drew the "correct conclusions". The Soviet side preferred to see Chernobyl as one of a series of major technical disasters. They pointed to the American Three Mile Island accident, the American Challenger spacecraft explosion and the Union Carbide disaster in Bhopal. What linked them all, in the Soviet view, was that men had failed to deal adequately with technology. For the Soviets, the goal was to present Chernobyl as a human failure rather than a failure of Soviet design. This was not what the West wanted for a verdict. If human fallibility were predominantly the cause of Chernobyl, then how could Western plants be safe from similar human failures? Throughout the summer, the battle was fought out sotto voce. Finally, a compromise was reached: the failure was to be attributed to the "men-machine-interface", the way that the operators interacted with the technology. It was a phrase both sides could live with*.'[360]

Thus, the criticism brought forward by Hamman and Stuart was less about concrete numbers.

[358] Ibid., p. 190.
[359] Ibid., p. 212.
[360] Ibid., pp. 222.

Rather, they considered highly problematic the politics that had dictated and conditioned the establishment of the 'official facts', facts that had been presented to the public as 'absolute truths' and not the 'lowest common denominator' between clashing economic interests. Like Mackay and Thompson's publication, *Mayday at Chernobyl* focused on shedding light on the universal structures of the global nuclear programme through the lens of the Chernobyl accident. Instead of providing a coherent narrative on the causes, the evolution and the consequences of the accident, Hamman and Stuart concentrated their efforts on pointing out the still unanswered questions and on explaining the politics underlying the creation of 'scientific facts' in the field of nuclear energy.

Haynes / Bojcun

In 1988, two other authors chose a similar approach for their account on *The Chernobyl disaster*.[361] Viktor Haynes and Marko Bojcun – two academics working in the field of Eastern European studies – provided directly in their book's subtitle the summary of their interpretation of the events: '*The true story of a catastrophe – an unanswerable indictment of nuclear power*.' Based on a wide range of sources, including eyewitness reports, Russian and Ukrainian newspaper articles, and IAEA papers, the authors gave a detailed description of RBMK-technology, the progression of the accident as it unfolded, the spread of the radioactive plume, the evacuations, and the estimates of the health effects of the fallout. Regarding the estimates of health effects made by Soviet and British radiation experts, Haynes and Bojcun were particularly shocked about the systematic comparison between the Chernobyl death toll and the overall number of cancer deaths which, to use their own words, '*strikes one as perverse.*'[362] '*The logic of such an argument leads inexorably to the view that nuclear accidents don't matter, as they affect only thousands of people while millions will die anyway; and from there to the notion that killing people is justified because they will die eventually in any case*.'[363] Moreover, the authors considered the comparison of the fallout intensity with natural background radiation to be a particularly dishonest presentation, insofar as the 'natural' background radiation itself was to a large degree also a man-made phenomenon caused by the '*routine and accidental emissions from nuclear power stations, uranium mining and atomic blasts, as well as by medical treatment involving radioactivity*.'[364] Haynes and Bojcun did not present a concrete death toll, but rather pointed to the implicit assumptions that underpinned the various calculations and spoke of a range of '*between a few thousands to over 100,000 people (depending on which experts*

[361] Viktor Haynes and Marko Bojcun, *The Chernobyl disaster* (London: Hogarth, 1988).
[362] Ibid., p. 204.
[363] Ibid., p. 82.
[364] Ibid.

are to believed) over the next half a century.'[365] In so doing, they made a very important assumption themselves: '*As long as it was thought that low-level radiation was not dangerous, nuclear reactors were deemed to be 'safe'. Evidence has shown that any amount of radiation is dangerous*.'[366] This last was a statement many radiation specialists would not agree with at all.

When they examined the question of who was to blame, the authors presented a response that lay in direct opposition to the 'official narrative' that had been provided by the IAEA and the British nuclear experts. According to Haynes and Bojcun, it was unreasonable to saddle the workers with the responsibility for the accident. Rather, it ought to have been allocated at a much higher level in the hierarchy: '*The faults in construction of Chernobyl's Number 4 reactor, the difficulties in its operation and the lack of a containment structure to withstand the explosion cannot be blamed on its builders and the station's operators and managers. The responsibility rests with the Politburo, Gosplan and the ministries in charge of construction*.'[367] Haynes and Bojcun also went on to contest the narrative of the 'well organised evacuation'. They dedicated a whole chapter to '*Unnecessary Irradiation*' and concluded that the commission responsible for the evacuations had '*failed miserably to protect the health not only of those living within the five kilometres of the station,*'[368] but also those in a more extensive geographic area.

Criticism towards the Soviet political system was evident throughout the book, but it was perhaps most clearly and explicitly formulated in the chapter on '*Lessons of Chernobyl*': '*Simply put, the disaster assumed its full dimensions as the result of a particular system of political rule, of the habits and self-interest of its bureaucratic elite, of the ways in which it has become accustomed to valuing the security, prestige and economic might of the state above the welfare of its labouring classes.*'[369] Interpreting Chernobyl as a 'Soviet accident' rather than a 'nuclear accident' not only became increasingly more common in the late 1980s/early 1990s, but this interpretation was also voiced elsewhere and not just in Britain; this is to a great extent due to the diffusion of the 'insider stories' of Vladimir Chernousenko, Grigori Medvedev, Alla Yaroshinskaya, and Zhores Medvedev.[370] Haynes and Bojcun did not stop here, however. The sentences that followed the statement cited above, therefore, are of crucial importance to the narrative of their book: '*We do not suggest for one moment that the leaders of Western nuclear power states behave in a fundamentally different way. The participation of the IAEA member states in the cover-up of the Chernobyl*

[365] Ibid., p. 204.
[366] Ibid.
[367] Ibid., pp. 140.
[368] Ibid., p. 149.
[369] Ibid., 201.
[370] I will discuss these authors further in the chapter on the transnational Chernobyl debate.

disaster speaks for itself.'[371]

Thus, according to Haynes and Bojcun, Chernobyl was not a single isolated event, given that '*serious accidents at civilian installations have been happening on average once a decade.*'[372] Furthermore, Chernobyl was by no means the worst nuclear accident that could have happened, for only about 10 per cent of the radioactive inventory had been discharged and the fires were contained before they could engulf the other reactors.[373] Therefore, the fundamental problem could not be identified in the Chernobyl accident, but rather in the hunger for '*superpower status*' of '*the ruling classes of the advanced industrial societies*', a status that was guaranteed by the civilian and military exploitation of nuclear energy.[374] The presence of these statements excludes Haynes and Bojcun's narrative from being analysed and classified amongst those with anti-Eastern European or anti-Soviet components. Although they undoubtedly criticized the Soviet state for its failures in carrying out the emergency measures, the Western states certainly did not walk away unscathed by their criticism, and hardly looked better in this regard. The authors believed the problem was to be found on an entirely different scale that went beyond the borders of each political system: it was to be found in the logic inherent to industrial societies and their thirst for power and constant growth. When assessing the authors' narrative using the categories of self-affectedness and radiophobia/apocalypse, or rather the role played by the health impact of the fallout in Britain and in Eastern Europe, it is clear that Haynes and Bojcun did not formulate their own narrative but instead spoke of the political dimension of reports that evaluated these health effects. They did dismiss, however, the assumption that low levels of radiation have a positive impact on the human body – an assumption that is still widely accepted amongst nuclear scientists and engineers today and figures under its scientific name, *radiation hormesis*.

Cutler / Edwards

Individual voices in Britain also openly attacked the British nuclear enterprise, military and civil divisions alike. With regard to the aftermath of Chernobyl, the book *Britain's nuclear nightmare* written by James Cutler and Rob Edwards is probably the most important exemplar.[375] Although the focus of the book was not Chernobyl, its importance to this analysis resides in the fact that it is a telling example of the way British anti-nuclear power activists placed Chernobyl in relation to the British nuclear enterprise. The book's main topic was the Sellafield-Windscale complex. It provided

[371] Ibid., p. 201.
[372] Ibid.
[373] Ibid., 205.
[374] Ibid., 206.
[375] James Cutler and Rob Edwards, *Britain's nuclear nightmare* (London: Sphere, 1988).

detailed descriptions of the history of the site, the Windscale Fire, the discharges that were released into the Irish Sea, and the cancer rates in children living near the site. In addition, it addressed issues connected to the working conditions of plant workers and questions of proliferation.

In chapter 9, titled '*Patterns of Deceit*', the authors incorporate Chernobyl into their considerations; they do so to link the British official reaction in 1986 to their main topic: the Sellafield-Windscale complex. The chapter opens with the following phrases: '*Three days after Chernobyl exploded, Britain's Environment Secretary, Kenneth Baker, told the House of Commons: "There is openness and frankness in this country in dealing with the nuclear industry ... if there had been an accident of that kind in this country, there is no question, but that we would have been open and frank about it straight away." Britain's honesty, the Government suggested, contrasted favourably with the Soviet Union's secretiveness. Yet the full report of the inquiry into Britain's only comparable accident at Windscale was only published three decades after the event*.'[376] Yet, this blatant secretiveness had not begun with Windscale, it was an intrinsic feature of the British nuclear enterprise from its inception. To prove this point, Cutler and Edwards referred to the main authority of British nuclear history, Margaret Gowing.[377] '*According to the official atomic historian, Professor Margaret Gowing, Britain's post-war Prime Minister, Clement Atlee, was "obsessively secretive" about the development of the atomic bomb. In a lecture at Cambridge in 1978, she highlighted the secrecy in which all the early decision-making was shrouded: "The Cabinet as a body was completely excluded from major atomic decision-making. A small inner ring of senior ministers took decisions in a confusing number of ad hoc committees with science fiction titles which never reported to the Cabinet*."'[378] This built-in secretiveness did not apply just to the military applications of this technology. The same was also true for electricity generation: '*When it came to beginning development of nuclear power for civil purpose, even the chairman of the electricity generating authority, Sir Walter Citrine, was kept in the dark. In 1954, when the Government convened a working party to discuss plans for Britain's first reactor programme, it never told Sir Walter of its existence*.'[379] And this secretiveness was very much preserved even during the 1980s: '*When the Government papers for 1954 were released in 1984, a large number relating to nuclear energy were*

---

376 Ibid., p. 164.

377 Margaret Gowing was a British historian of science who is mainly known for her work (in collaboration with Lorna Arnold) on British nuclear history during WWII and the post-war period: *Independence and Deterrence: Britain and Atomic Energy, 1945–1952* (London: Macmillan, 1974) and *Britain and Atomic Energy, 1935-1945* (London: Macmillan, 1964). Both books are the result of her work as the historian and archivist of the UKAEA in 1959-66. For further information on Gowing's life and work, see: Robert Fox, "Obituary: Professor Margaret Gowin," in *The Independent*, 20 November 1998, http://www.independent.co.uk/arts-entertainment/obituary-professor-margaret-gowing-1186010.html (last accessed: 15 November 2013).

378 Cutler/Edwards, *Britain's nuclear nightmare*, p. 165.

379 Ibid.

withheld, some of them under a provision which enabled them to be kept under wraps forever.'[380] The change that Chernobyl brought to this setting was '*a veritable avalanche of brave new intentions*.'[381] However, the initiatives taken were, from the point of view of the authors, primarily superficial. One example of such was when Sellafield's chairman Christopher Harding in 1986, '*launched a £2 million advertising campaign to try to close the "comprehension gap" which had been opened up on the subject of nuclear power*.'[382]

In the last chapter of the book, '*The Faustian Bargain*', the authors again refer to Chernobyl to reinforce their argument. The chapter opens with a fictional description of an accident at Sellafield. This scenario was intended as a direct challenge to the British '*industry's most persistent post-Chernobyl riposte: "It could not happen here."*'[383] The authors argued that such a statement needed to be clarified, specifying: '*Britain does not run any reactors designed exactly like the Soviet reactor, so a Chernobyl-type accident is logically impossible. A Chernobyl-scale accident, though, is quite possible*.'[384] This way in which Cutler and Edwards transfer the scenario over to the national nuclear fleet, by showing what a similar accident would mean to the home country, is an expression of self-affectedness common to many direct accounts of Chernobyl.[385] Chernobyl, here, was mainly used as proof that 'it can very well happen'. Cutler and Edwards even made the intention underlying this reference explicit when they wrote that '*until 26 April 1986 no one in the industry ever really thought that a reactor in the Soviet Union could explode and dump its radioactive debris all over Europe*.'[386]

But Cutler and Edwards spoke of Chernobyl as more than just an abstract event. They provided information on its impact on public health, and rather than adhere to one estimate or another, they supplied the two extremes of the death toll estimates – and in so doing, called attention to the dramatic disparity between them: '*According to official estimates it will kill up to 2,000 people in Europe, including perhaps forty-five in Britain, and as many as 40,000 people in the Soviet Union. According to Ernst Sternglass, radiology professor at the American University of Pittsburgh, the eventual overall death toll could exceed 1,000,000*.'[387] To illustrate the global impact of the fallout, the authors pointed to the case of Britain: '*Eighteen months later, more than 700 farms in Cumbria, Wales, Scotland and Northern Ireland were still affected by restrictions on sheep*

[380] Ibid., p. 166.
[381] Ibid.
[382] Ibid.
[383] Ibid., p. 188.
[384] Ibid.
[385] The way in which this transfer of the Chernobyl scenario over to a different national context was reflected in the literature is examined in chapter 3.2.1.
[386] Cutler/Edwards, *Britain's nuclear nightmare*, p. 187.
[387] Ibid.

movement and slaughter because of radiation from the accident.'[388] From here they directly identified a grave error and failure on the part of the British nuclear authorities: '*The response of the monitoring and regulatory agencies in Britain was manifestly incompetent. Dozens of children throughout the country will contract thyroid cancer over the next thirty years because of the Government's failure to warn of the dangers of drinking Chernobyl-contaminated milk*.'[389] Their greatest failure, however, was that the British government had not learnt the right lesson from the accident in terms of its energy policies. While almost all European countries had never embarked on the nuclear enterprise, had abandoned their plans or now, after Chernobyl, had at least postponed their new build projects, '*there were only three exceptions to the rule: the USSR, France and Britain*.'[390] But at least, there was a positive message to the British public on which the authors ended their account: '*In the last resort, the decisions which have to be taken about nuclear power and nuclear weapons are not technical or economic, they are political. The only necessity for the abandonment of civil and military nuclear technology is political will. The essential prerequisite for public will is public demand. Unlike poor Dr Faustus, the British public still has a choice. Even at the eleventh hour, we can escape damnation. We can opt for a future powered and perverted by plutonium, or a future free from nuclear contamination. We can chose to wake from Britain's nuclear nightmare.*'[391]

Three reasons underpinned the decision to quote this book in such detail. First, by highlighting the criticisms put forth by the authors, it was possible to show that similar language was used to describe the British nuclear sector as had been when speaking of the French nuclear sector, namely with regard to the secrecy with which it carried out its affairs and its description as a sphere restricted to a close circle of insiders. Secondly, these quotes illustrate well the close connection that was made in Britain between Chernobyl and the Sellafield-Windscale complex. As I have shown above, this link was made in media reports and by the local sheep farmers. *Britain's nuclear nightmare* reveals the importance of the Sellafield-Windscale complex in the British anti-nuclear argument. Even in the direct aftermath of Chernobyl, the main concern was not how many people could possibly die in Britain from the fallout but rather the risk Sellafield represented. In this regard, Chernobyl's impact in Britain figured more as a footnote in *Britain's nuclear nightmare* as an illustration of the geographical reach of a large-scale nuclear accident – and the risk that soon the next large-scale nuclear accident could occur was right there in Britain crouched on the Cumbrian coast, at Sellafield. Thirdly, the last quote cited from the end of the book renders obvious that even

[388] Ibid.
[389] Ibid.
[390] Ibid.
[391] Ibid., p. 194.

an entirely anti-power-plant-argument could not be thought of in Britain without linking the question back to the military nuclear complex.

2.1.5 Conclusion

A comparison of the initial statements released by French and British authorities in response to news reports about the accident at Chernobyl demonstrates how similar they were.[392] In both countries, state officials focused on dismissing rumours that the fallout from Chernobyl could have any negative consequences for the countries themselves.[393] In addition, they stressed that the national plants were simply not comparable to Chernobyl because the reactor designs in the West were completely different from that used in the USSR. Thus, they declared that there was no cause for worry, about the fallout or the risk that a similar accident could happen in the homeland. However, in France, in the second week of May, the very same authorities were publicly confronted in the media with the accusation that they had purposely held back the real data on radioactive fallout in France in order to protect the agricultural sector and the French nuclear enterprise from negative publicity. These accusations were brought forward by anti-nuclear activists and alarmed journalists who had closely observed the protective measures taken in other Western European countries, particularly those in West Germany and Switzerland. These critical voices were puzzled about the disparity between these measures taken abroad and the lack of official concern in France and therefore called into question the statement that France had not been touched by any serious fallout. This dispute came to be commonly referred to as the *affaire Tchernobyl*. The counter side expressed their criticism of the official French response to Chernobyl and the behaviour of the state experts, adopting the 'traditional' French anti-nuclear strategy which included strong anti-state arguments. From this perspective, the *nucléocratie* and the internal logic of the French nuclear techno-political regime as a whole were blamed for the 'lies' and 'cover-ups' surrounding the

[392] For a summary of the French-British comparison, see the second part of the article: Bauer/Kalmbach/Kaspersky, *From Pripyat to Paris*.

[393] In her dissertation, Sezin Topçu argues in favour of the '*singularity*' of the French management of the Chernobyl crisis, see: Topçu, *L'agir contestataire à l'épreuve de l'atome*, pp. 197. However, although French authorities may have insisted longer than their British counter parts that there was no reason to implement counter-measures, the initial rhetoric and reassurances were exactly the same. What is more, before the British sheep farm restrictions had been instated, there had not been any communication between radiation protection agencies and the highland farmers, which shows that in some aspects the communication on the impact of Chernobyl in other European countries was not so '*radically different*' from the French case as Topçu declares it to be. To be sure, the French case is unique, but in the way that every other national setting is unique. Therefore, a comparative approach is particularly fruitful as it points out specificities of the respective cases while at the same time it sheds light on similar patterns.

Chernobyl accident and how it had been handled thus far. In this way, the French Chernobyl debate very quickly reached national proportions and focused on the role of the French state experts. It was precisely this role – the role these nuclear experts played within the power structures of the French state – that was called into question in the *affaire Tchernobyl*.

British discussions in the immediate aftermath of Chernobyl were quite different, although it was soon revealed that the public authorities had completely misjudged the impact of fallout in the UK. Their predictions were proven wrong not once but several times. Firstly, in early May 1986, in some parts of Britain, rainwater and milk were found to exceed radiation safety levels. Secondly, in June 1986, upland sheep farmers were informed that they could not continue to handle their animals as usual since over the previous weeks, the grazing sheep had ingested too many radionuclides, and thus restrictions needed to be implemented to keep the contaminated meat from entering the human food chain. Later, it turned out that these restrictions would not last a mere couple of weeks, as was initially predicted by British nuclear authorities, but some farmers would have to live with them for many years to come. However, even these openly observable miscalculations of the state experts did not in any way lead to something like a 'British Chernobyl affair'. Such a thing simply never took place, and today only a few people even remember or know about the impact Chernobyl had on Britain. No state official was publicly accused of having purposely held back the 'truth' about the fallout. This argument is almost completely absent in the British Chernobyl debate and applies for the institutions and individuals alike. There was no 'British Pierre Pellerin', an individual accused of having communicated incorrect information. If somebody was indeed blamed for mismanagement of this emergency situation it was the government and more specifically the MAFF. But the accusations were of incompetence and not of a deliberate cover-up. They gained in importance mainly at the local and regional levels but not at the national level. And after the government had delivered a detailed report to the House of Commons and created the UK Response Plan, all public debate on the issue was closed. Obviously Britain was not without its critical voices, especially in May 1986: they blamed the British nuclear techno-political regime for its secrecy regarding the true impact of the accident and for refusing to reconsider the new build plans in the face of the evidence that severe accidents were indeed possible. But these critical voices soon lost steam, or at least lost their public visibility. It seems that the narrative released by the public authorities – 'what needed to be learnt had been learnt' – had supplanted these objections and views; now Britain was better prepared in the event such an accident abroad should ever happen again. Given that the integrity of the state experts had not been publicly called into question, but the government's management of the emergency, Chernobyl could be framed, from the state experts' perspective, as an experience from which to learn, which would in turn make it possible to improve the existing system.

In general, it appears as though the British public placed more trust in their experts than in their politicians in May 1986. The public, in fact, had turned to these experts – in the form of the 800,000 calls to different agencies cited above – in a moment when contradictory statements on Chernobyl had been released by members of the national and local governments. This trust, at least with regard to radiation protection, does not seem to have been lastingly damaged, not even by the confusion about sheep farm restrictions. In France, however, the critical voices neither trusted the state experts nor the politicians insofar as they were considered to be one single entity within the French nuclear techno-political regime.

The one group of people who could potentially have turned the sheep restrictions into a 'British Chernobyl affair', the sheep farmers, however, did not frame their assumptions of bigger politics at stake in connection to Chernobyl. Rather, the sheep farmers in the Lake District related the restrictions to the Sellafield-Windscale complex. They considered the restrictions on sheep farms as a measure to cover-up the regional impact the Sellafield plant and the continuing impact the 1957 Windscale Fire had had on the area. The Windscale Fire, and not Chernobyl, was, in fact, the discursive arena within which nuclear state officials were publicly accused of having deliberately held back the 'truth' about the fallout. Moreover, the Chernobyl fallout was considered by British nuclear critics to be negligible when compared to the level of threat represented by Sellafield.[394] In this regard, even after Chernobyl, Sellafield continued to be perceived as the primary incarnation of nuclear risk. For this reason, anti-nuclear plant protest in Britain has focused on Sellafield and never on Chernobyl. The opposite occurred in France, where the *affaire Tchernobyl* became the focal point for anti-nuclear protest. But these aspects will be further discussed in the following chapters, in which the role of Chernobyl commemoration in anti-nuclear plant campaigning will be examined. For the moment, I only want to point to the interesting fact that in Britain the Chernobyl experience was put into the context of the Sellafield experiences, whereas in France it became the general frame used in the criticism of the *nucléocratie* as opposed to experiences with accidents or incidents in French nuclear plants or the emissions from La Hague – the reprocessing plant in Normandy. In France, the Chernobyl experience also reinforced the

[394] The book *Britain's nuclear nightmare* (discussed above) is a telling example of this view. It starts with a description of the landscape around Sellafield: '*On the western border of the Lake District a narrow single-track road winds through a series of hairpin bends over the crest of Corney Fell. In the shadow of the mountains, rolling pastures stretch along the shores of the Irish Sea. It is one of those special lakeland places the sight of which can give you a physical thrill. It can make you feel that life is worth living. Standing on the edge of the fells and surveying the coastline to the west, it is hard to believe that the beaches and estuaries are irredeemably polluted by one of the most poisonous of all man-made substances – plutonium. It is impossible to credit that the only places in the world more contaminated with radioactivity are the ghost town of Pripyat next to the burnt-out hulk of Chernobyl, and the remote sites around the globe where nuclear bombs have been deliberately exploded*.' (p. 1) Although this region was one of the British areas most affected by the Chernobyl fallout, the authors only referred to the plutonium emitted by Sellafield and did not even mention the caesium and iodine deposited by the rainfall in 1986.

profound mistrust many activists had of French nuclear experts, a mistrust that through the *affaire Tchernobyl* spread to the French public. Chernobyl had much less of a crucial impact on the credibility of public radiation safety expertise in Britain than it did in France. Even the open dispute between public experts and farmers in Britain did not lead to a lasting general distrust in nuclear experts. Wynne explains that the outcome of this dispute was to be found in the direct interaction of the two groups. This interaction implied that in spite of the confrontation both sides were able to gain a better understanding for the other's positions, working methods, and shortcomings: '*This serendipitous and limited interaction improved the credibility of these scientists and of their associated institutions, even though such encounters revealed scientific uncertainty. The Institute for Terrestrial Ecology was most fortunate in this respect because, as a locally based institution, it had the closest such practical contact. Through the farmers' informal grapevine, it subsequently gained a reputation as being plainspeaking, open about uncertainty, independent and trustworthy*.' A similar dynamic enabled the rehabilitation of the MAFF in whose case '*the situation was rescued only by the mediation of local MAFF officials who were personally known and trusted by the farmers.*'[395]

In this regard, the fact that public experts had to publicly admit their ignorance of certain aspects of their field of expertise resulted in the restoration of their public credibility and authority.[396] Because events had not played out as the experts had predicted, these last were perceived to be on par with laypersons with regard to their fallibility. When seen like this, it was possible for even the people most troubled by their miscalculations, the sheep farmers, to pardon them. The blame was phrased as 'They should have know better!'. In France, however, the blame was phrased as 'They did know better!'. The public experts were not perceived to have failed in their task but to have withheld their knowledge from the public, to have kept it for a restricted circle of individuals.[397] And though the public waited for an apology, this apology never came, since the state

[395] Wynne, *Sheepfarming after Chernobyl*, p. 38.

[396] This interpretation does not necessarily conflict with the British 'institutional mistrust' identified by Bickerstaff et al. and applied by Lethonen in his analysis of British reactions to Fukushima. The notion of 'institutional mistrust' is linked to British nuclear policy debates for which Bickerstaff et al. demonstrated that the British public has more trust in markets than in their government and public authorities, a discursive strategy referred to by the authors as 'markets-know-best'. In this regard, 'institutional mistrust' would then be concerned with the question of whether a privatized radiation protection authority would have reacted better than a public entity. Thus, it does not oppose the hypothesis that the credibility of public authorities in the field of radiation protection could be restored through the interaction of state experts with the public.

[397] Sezin Topçu considers this accusation as a proven fact; see: Topçu, *L'agir contestataire à l'épreuve de l'atome*, pp. 196. She considers a policy of secrecy to underpin the French management of the Chernobyl crisis, which she declares to have been unique in terms of its denial of an impact of the fallout in the country itself. According to Topçu, the official handling of the Chernobyl crisis in France is the perfect example of the French way to govern the nuclear sector with secrecy. I think Topçu's analysis gives too little space to the role journalists played in the construction of the *affaire Tchernobyl*. Initially, many journalists simply repeated the statements by French nuclear experts instead of critically questioning them, despite the fact that the French nuclear sector had been blamed for its secrecy long before the Chernobyl accident took place. Moreover, the fact that radiation experts communicated their

experts were convinced that they had not committed any mistake in their risk evaluation. Therefore it never came to a point, like in Britain, in which state authorities could enter into a dialogue at eye level with the concerned public. When this condition never materialized, the ground was effectively prepared for the *affaire Tchernobyl* to live on in the French public memory, and this because in the months following the Chernobyl crisis the loss of trust was never resolved. When the French public experts believed the problem to be one of communication, this 'gap in trust', so to speak, was widened even further. They believed, much like their British counterparts, that if they could only communicate with and better educate the public on radiation risks, their credibility and authority would be restored. But the opposite proved to be true: the more they communicated, the more their communications were perceived and framed by their critics as a way to cover-up a crime they had committed. This analysis, however, alludes to a period of time beyond 1988 and therefore will be discussed in more detail in the following chapter.

In France, the *affaire Tchernobyl* set the precedent for the institutionalization of nuclear counter expertise, namely the foundation of CRIIRAD and ACRO. In Britain, however, such strong and publicly visible counter expertise on the impact of radiation from the civil nuclear enterprise did not exist. Nor were any trials conducted at the time to implement some such similar structure in relation to Chernobyl.[398] This implies that the personal histories of anti-nuclear power activists in Britain were not particularly closely linked to Chernobyl, while in France, for example, Michèle Rivasi the founder of CRIIRAD became one of the most well-known anti-nuclear activists and politicians of the Green Party. Also, few journalists in Britain personally engaged in unveiling the 'truth' about Chernobyl's impact; from the early 1990s onwards, the topic of sheep farm restrictions almost completely disappeared from newspapers despite their continued enforcement. In France, on the other hand, several journalists felt personally betrayed by the information policies of the public authorities. They went on to figure prominently in the creation of the *affaire Tchernobyl* and, as will be shown in the following chapter, kept its memory alive for years to come, especially on 26 April

estimations of environmental effects did not automatically imply that these calculations were correct, as the case of Britain shows clearly. Thus, in order to understand the trajectory of a Chernobyl debate in a given country, it is necessary not only to take into consideration the state experts' crisis management and the communicated fallout intensity but a wide range of other factors, as well.

398 The non-existence of 'Alternative' Environmental Research Organisations (AEROs) in Britain might be, among other reasons, due to a less centrally organized political system as well as strong stakeholder participation through the important role of committees, inquiries and hearings in the decision-making processes. The inquiries especially have served as a 'security valve' (Walt Patterson) in the identification of new zoning for nuclear plants. However, these forms of stakeholder participation have been severely criticized, namely with regard to the Sizewell B inquiry; see: Brian Wynne, *Rationality and Ritual*. However, seeing as AEROs haven't yet been a prominent topic for research, any statement about the non-existence of AEROs in Britain is rather speculative. One very important exception to this rule of non-knowledge about AEROs is the case of West Germany; see: Wolfgang Rüdig, *Mobilising Environmental Expertise: 'Alternative' Research Institutes in Germany* (University of Strathclyde Working Paper, 2000).

each year.[399] This driving force to spur public commemoration of Chernobyl does not exist in Britain.

Regardless of all these differences in the contextual setting between the two countries, however, it is interesting to observe that the political parties of both did not play a prominent role in the early history of the Chernobyl debate, as actors or as the subject of debate. This is not to say the political parties were entirely absent, in fact, the Green Parties in both countries took up the topic in order to position themselves against the government's nuclear policies. In the Labour Party, the topic of Chernobyl led to profound debates about the future role of nuclear power in British energy policies. However, in neither of the countries did Chernobyl alter the general cross-party agreement on nuclear energy issues, which had existed since the launch of the national nuclear endeavour. Due to this general cross-party agreement, opposition against this technology was limited to the streets and expressed by the public – thus the topic of anti-nuclear protest has always been closely associated with the rise of *new social movements*. According to many anti-nuclear campaigners, the established political parties adhered to the nuclear agenda of the *nucléocratie*, an agenda that was intrinsically in opposition to anti-nuclear convictions. This perception was particularly strong in France and might explain why the *affaire Tchernobyl* revolved more around nuclear experts and less around the government. From an anti-nuclear activist's point of view, it was not surprising that the government acted in a way that protected the French nuclear enterprise. But within such a system, at least the public experts should be trustworthy. This would also explain why Pierre Pellerin soon became the main target of criticism. At the same time, this profound loss of trust in official nuclear experts paved the way for the new counter experts to rapidly gain credibility and attention.

Based on these observations for France, where the crisis management was interpreted as a striking example of the way the *nucléocratie* governed public policies, I would like to hypothesize why the British restrictions on sheep farms did not spark a similar 'British Chernobyl affair'. Like in France, the topos of a nuclear technocracy has been a central element of the British anti-nuclear discourse. It has been used not only with regard to the military complex, but also in relation to the large-scale new build projects for nuclear power plants.[400] As Markku Lethonen has argued, '*in the UK, the power of the nuclear technocracy has declined since the split-up of the UKAEA [in*

[399] However, I do not consider the media as a whole to be an actor in the French Chernobyl debate. It is rather the engagement of certain journalists like Hélène Crié, Noel Mamère, or Galia Ackerman that has been responsible for the presence of Chernobyl in the French media over the years. This is why it is important to not take into consideration only the action of institutions and organizations but to link this action back to individual agency within these organizational structures and power relations.

[400] For instance, Ian Welsh, in the introduction to his book *Mobilising Modernity* – a book based on his 1988 dissertation '*British Nuclear Power: Protest and Legitimation 1945-1980*' – uses the term '*British nuclear technocracy*'.

1971].'[401] In addition, the successful campaign of British anti-nuclear power activists in the late 1970s against the government's plans to build a series of Pressurized Water Reactors (PWR) succeeded in weakening '*British nuclear technocracy*' not only institutionally but also discursively. Thus in the mid-1980s, this topos with regard to the civil use of nuclear power had lost much of its *Wirkungsmacht* ('power to influence'). Not even the anti-nuclear power activists framed in this way the poor manner in which the sheep farm restrictions had been handled. The incidents involving the Sellafield-Windscale complex, however, were very clearly considered to have been wilfully covered-up by the British nuclear technocracy – in the very moment Chernobyl drew public attention toward the question of radioactive fallout in Britain. But somehow this was framed as a story from the past, and this narrative was not transferred over or projected on to the situation caused by Chernobyl. In particular, the miscalculations of the public experts regarding the scale and duration of the sheep farm restrictions were not interpreted in this way. The NRPB and the MAFF were indeed criticized for their incompetence, but their actions were not considered to be part of the actuation of a bigger nuclear technocratic policy. In France, on the other hand, the statements released by the SCPRI and the Minister of Agriculture were considered to be part of a larger nucleocratic policy. Though, as the example of the publication *Britain's nuclear nightmare* illustrates, there were still activists in the late 1980s who argued against the power of the British nuclear techno-political regime and blamed it for having a devastating impact on Britain's environment and public health. But Chernobyl was barely part of this argument, as is again seen in *Britain's nuclear nightmare*.

The scientists who evaluated the impact of the fallout in the highlands were not considered to be part of the British nuclear techno-political regime. They were seen as independent experts who, in the end, ensured that the radionuclides would not enter the human food chain. Although they had failed academically in their predictions, they were still considered to be independent from the nuclear policies of the state. Thus, in this regard, the French nuclear sector was perceived to be far more powerful and influential than the British nuclear sector and to have penetrated society far more intensively. From today's perspective, when the sheer size of the national nuclear fleets and the resulting shares of nuclear power in electricity generation are compared – 80% in France versus 16% in Britain – it seems completely logical that the French nuclear sector is perceived to be more powerful and influential than the British nuclear sector. Thus, again, from today's perspective, one might argue that there was simply no need to turn the miscalculations by British nuclear experts into

[401] Markku Lethonen, "Reactions To Fukushima in Finland, France and the UK – Rupture or Continuity in the Nuclear Techno-Politics?," *Second 3.11 Virtual Conference (2013),* http://fukushimaforum.wordpress.com/online-forum-2/second-3-11-virtual-conference-2013/reactions-to-fukushima-in-finland-france-and-the-uk-rupture-or-continuity-in- the-nuclear-techno-politics/ (last accessed 15 June 2013).

a wider debate about power dynamics of the nuclear techno-political regime since the topic of nuclear power just did not play an important role in every day life. However, this argument only partly conforms to the setting of 1986. Already back then, France had more nuclear power plants than Britain. But the predominant generation of electricity in France by nuclear power plants was quite a recent development that came about in the 1970s with the *Plan Messmer*. Like France, Britain had for some time considered itself to be a lead player in nuclear engineering. The nuclear power programme boosted national pride, of which the opening of the *Calder Hall* reactor in 1956 by Queen Elisabeth II is among the most illustrative examples. Furthermore, in 1986, British plans to build – like France – an entire fleet of new PWRs had been struck from the programme only a couple of years earlier. In the late 1970s, following the oil crisis of 1973/74, the CEGB and the British government had entirely dedicated themselves to nuclear power and considered it the future of electricity generation, the only way to '*keep the lights on*'. That initially there were also plans to not import this new fleet of reactors was yet another similarity with the French nuclear policies. Britain, in fact, had invested intensively in the development of its own reactor design. Although the plans for large-scale new build projects were eventually rescinded, the Thatcher government was very much pro-nuclear and pushed for the construction of new reactors on the already existing sites at *Sizewell* and *Hinkley Point*. Plans for more new build were only totally abandoned in the early- and mid-1990s with the privatization of the British energy sector. Thus, in 1986, Britain and France were much closer in terms of their political elites' 'nuclear mind-set' than today's shares of nuclear power in electricity generation might suggest. Therefore, it makes indeed sense to raise the question as to why the civil nuclear techno-political regimes were perceived so differently in France and Britain, and why, in the first case, the regime's power dynamics were associated with the official handling of the Chernobyl crisis, while in the second, this interpretative framework barely played a role in the public debate at all.

To explain this difference, we must look at the different points the anti-nuclear protest had focused on in each country. In France the anti-nuclear power movement (or, as Lisa Lynch labelled it: *anti-reactor activism*) was very strong, whereas the British anti-nuclear protest was far more concerned with nuclear weapons. And while there were also activists who directed their actions against nuclear power plants, they found themselves in a quasi-competition with the CND for public attention, a competition the CND clearly won. The argument of the majority of British anti-nuclear campaigners was more global in scope as it turned its focus on the universal threat of a nuclear war. The issue of nuclear power plants, then, was grouped together with the threat of proliferation. Even if it was considered to be a more minor part of a larger enemy, the British weapons-focused anti-nuclear protest did not entirely overlook the national civil nuclear sector, but considered it in a more

global context. This contextualization of the civil nuclear sector is very much represented in the book *Something in the wind* by Mackay and Thompson: the two authors used Chernobyl as an argument to underpin their position within the context of the global nuclear disarmament discourse but did not frame their interpretation of the event in such a way that it could serve as a direct argument against the British civil nuclear programme. Only adhering to this discursive framing of Chernobyl, the book was not concerned with the impact of the nuclear fallout in Britain the moment that Britain was just not the level upon which they situated their argument. In the end, what benefit would come of phasing out nuclear power in Britain when the nuclear arms race continued to go unchecked at the global level? Therefore, the national and global military nuclear techno-political regime was what the British anti-nuclear campaigners protested. This framing is clearly presented in the writing of other critical authors, as well: namely in Hamman and Parrot, and Haynes and Bojcun. In France, however, nuclear politics, policies, and polities were not primarily addressed at the global scale. It was within the very concrete French national nuclear power techno-political regime that Chernobyl was discursively embedded.

A broader conclusion may be drawn from this reasoning whereby the source of the different trajectories of the French and British Chernobyl debates lay in the different perception of how powerful the national civil nuclear techno-political regime was. In France, Chernobyl's impact was considered at the national level and was framed within the discursive context of criticism against the *nucléocratie*. In Britain, such an interpretative framework did not exist for the civil nuclear programme, since criticism against the nuclear enterprise had been predominantly directed against the military complex and had focused more on aspects of international relations than on the national nuclear energy complex. Thus, in Britain, Chernobyl was inserted into a global perspective, whereas in France the focus was placed on the impact the accident had had in the national territory.

2.2 1989–2005: Chernobyl memory in the making.

Before delving into the topic of this chapter – i.e. how the memory of Chernobyl has been constructed over time – it is worth calling attention to the British media reporting on Chernobyl on the occasion of the 10th anniversary. The reporting in 1996 exhibited an interesting aspect that was generally not characteristic of reporting on Chernobyl: for a short window of time, the health effects of Chernobyl in Britain were publicly debated. Whereas self-affectedness became the dominant issue of the French Chernobyl debate from 1996 onwards, this proved to be somewhat an exception to the dominant rule of non-perceived self-affectedness in Britain.

On the occasion of the 10th anniversary of Chernobyl, British media did not allocate much space to reporting on the accident's impact. According to Lynn Frewer et al. in their study on Chernobyl media reporting in different European countries, the absence of this aspect in Britain was mostly due to the intensive reporting on the *Dunblane tragedy*[402] and the BSE (more commonly referred to as 'mad cow disease') crisis: '*Both events dominated media coverage during the time period covering the Chernobyl anniversary in the UK, and it is likely that the total amount of reporting about Chernobyl was reduced*.'[403] However, the authors did not consider competing news events to be the predominant variable that dictated the extent to which Chernobyl was covered in the national news. The authors of the British study stated that '*this reporting appears to reflect the degree to which a country is affected by the hazard (in terms of risk exposure and associated effects, such as economic impact)*.'[404] This reasoning implies that neither Frewer's research group nor British journalists considered the radioactive fallout, which had led to the massive restrictions on sheep farms – many still place in 1996 – to be a major hazard to British public health, or at least not when compared to others, such as BSE.

The situation in France at the time was quite different. Although Chernobyl did not figure as a major news event in 1996, newspapers reported on the accident's impact. As such, the attention was directed toward the situation in Eastern Europe. But at the same time, the articles also referred to the *affaire Tchernobyl*, reminding readers of the government's 'cover-up' of the fallout in France. The question of the health effects induced by this very fallout gained extensive coverage several months after the 10th anniversary of Chernobyl, when in December 1996 a wild boar in the Vosges

[402] On 13 March 1996, a mass murder was carried out at the primary school in Dunblane (Scotland). After killing 16 children and one adult, the killer committed suicide. This school massacre was intensively reported in the media at the time.

[403] Lynn Frewer et al., *Media reporting of risk in 5 European countries at the time of the 10th anniversary of the Chernobyl accident, Report to the European Commission* (Norwich: Institute of Food Research, 1997), p. 17. The newspapers included in the research on the UK are listed on page 25: Guardian, Observer, Times, Sunday Times, Sun, News of the World, Daily Mirror, Sunday Mirror, Reading Evening Post, Whitehaven News.

[404] Frewer et al., *Media reporting*, p. 38.

was found, through random veterinary testing, to have significant levels of contamination. The ensuing testing of the surrounding forest resulted in the discovery of radioactive hotspots from the Chernobyl fallout. These findings let to a revival of sorts of the *affaire Tchernobyl*. By analysing measurements taken in other areas that had been subject to high rainfall in 1986, critics of the French government's narrative of 'non-affectedness' could show that there were indeed other regions as well that had noticeably higher levels of the radionuclides with longer half lives from the Chernobyl fallout: in the Mercantour, and on Corsica. After detecting an increase in a rare thyroid disease in the children on the island of Corsica, local doctors called for an epidemiological investigation into the causes. According to them, the increase in incidents might possibly be linked to the radioactive iodine from the Chernobyl fallout. Once this debate came to be known, Corsica became a focal point of the French Chernobyl debate, particularly since the island had not been included in the first maps that delineated the radioactive contamination in the country.

Essentially, where speculations about Chernobyl health effects were already circulating in 1996 in France – especially with regard to children on Corsica – this was basically a non-issue in Britain. This setting renders the contents of a short article in the Scottish tabloid newspaper *The Daily Record* on 23 April 1996 all the more interesting: '*Experts have ruled out any link between cancer in the Western Isles and the Chernobyl disaster. A Benbecula doctor claimed a big rise in cases could have been caused by radiation fall-out from the atomic plant in the Ukraine. But a study by Western Isles Health Board said there was no link – and revealed that cancer rates in the islands were below the Scottish average.*'[405] The case of Benbecula, a Scottish island situated 20 km west of the Isle of Skye, deserves further attention insofar as it sheds light on the way the question of Chernobyl-induced health effects was navigated in Britain. Not even a month earlier, on March 31, 1996, the readers of the *The Independent* were presented with an article titled '*Chernobyl link to cancer cluster on Scottish island*.' The article informed them that '*a sharp rise in cancer cases on a Scottish island is being linked to radioactive fallout from the Chernobyl explosion a decade ago. Doctors on Benbecula in the Outer Hebrides say the number of cancers has more than tripled in the past 18 months. They are demanding urgent investigation of the alarming rise, which they believe could be the result of people eating contaminated home grown vegetables, and locally produced mutton, venison, and seafood, over 10 years.*'[406]

The fact that parts of England, Northern Ireland, Scotland and Wales had received significant amounts of radioactive fallout in the first week of May 1986 was not discovered in 1996. The extensive restrictions on sheep farms, many still in place in 1996 as aforementioned, were a visible

[405] The Daily Record, "Nuke link to cancer ruled out," 23 April 1996.
[406] Liz Hunt, "Chernobyl link to cancer cluster on Scottish island," in *The Independent*, 31 March 1996.

and direct result of this fallout. But what was new in the case of Benbecula was that local doctors linked this fallout to an increase in the incidence of cancer[407] – an increase they were confronted with in their daily work and for which they could find no obvious explanation. The doctors on Benbecula asked themselves a series of interconnected questions: how did the island differ from other places with regard to environmental factors, and what about the environment had changed that could trigger such a change in the recorded cancer rates. Making the connections, the local doctors remembered that there had been news reports that the radioactive fallout of 1986 had been particularly 'high' in the Western Isles because of the intense rainfalls in that region at the time. They then went on to wonder whether the consumption of contaminated home-grown foodstuffs and the inhalation of these radioactive particles could have resulted in the local increase in cancer rates.

There are some remarkable similarities between the cases of Benbecula and Corsica. The debate on health effects from the ingestion of contaminated home-grown foodstuffs on Corsica was also started by local doctors who had observed an increase in the incidence of cancer among their patients. But unlike the case of the 'forgotten island' – a nickname that was attributed to Corsica in the French Chernobyl debate since it was not included on the maps released by the radiation protection agency in 1986 indicating the intensity of regional nuclear fallout – Benbecula did not instigate a nation-wide search for Chernobyl victims. On the contrary, the Benbecula story appeared for a few days more in British newspapers – articles on this topic were also printed in *The Independent*,[408] *The Daily Record*,[409] *The Times*,[410] and *The Herald Scotland*[411] – only to disappear forever. The exception appeared four weeks later on the anniversary of the Chernobyl accident as the short article printed in *The Daily Record* (cited above) on 23 April 1996, which communicated that any link between the increase of cancer on Benbecula and Chernobyl had been ruled out.

It is not my intent to delve deeper into the medical details of these two cases,[412] even if there is an important difference between the two insofar as the cancers debated in Corsica regarded thyroid cancers in children, whereas on Benbecula the doctors were confronted with lung and bowel

[407] As far as I can tell from the sources I have researched, the case of Benbecula was the first occasion on which the Chernobyl fallout in Britain was publicly claimed to have resulted in observable health effects.

[408] The Independent, "Experts to investigate island cancer deaths - Scottish health scare: Doctors on Benbecula fear high incidence may be linked to food contaminated in fall-out from Chernobyl," 1 April 1996.

[409] The Daily Record, "Fags to blame for isle cancer scare - Health chief's claim," 2 April 1996.

[410] Helen Johnstone, "Health director to study big rise in Benbecula cancer," in *The Times*, 1 April 1996.

[411] Elizabeth Buie, "Cancer island inquiry Health board to probe GPs' fears of Chernobyl or Sellafield link to Benbecula deaths," in *The Herald Scotland*, 1 April 1996; Calcun MacDonald, "Isle of desolate beauty haunted by the spectre of Chernobyl. Benbecula fears grow as cancer numbers rise years after the rain with the orange-red dust," in *The Herald Scotland*, 1 April 1996; William Tinning, "Chernobyl fall-out denial over Benbecula cancers," in *The Herald Scotland*, 4 April 1996.

[412] With regard to the most affected areas in Eastern Europe, there is an intense dispute under way regarding the health effects of the long-term ingestion of foodstuffs contaminated with low-level radiation. One of the major points that distinguish 'radiophobic' from 'apocalyptic' interpretations can be made using this very same debate.

cancers in men in their 40s and 50s. Even the International Physicians for the Prevention of Nuclear War (IPPNW) – one of the most critical counter expert groups regarding the health effects of low-level radiation – would agree that the cases of thyroid cancer in children are far more likely to be linked to an ingestion of radionuclides than cases of lung and bowel cancers in grown men. But as it is rather unlikely that these differences would be known to a wider audience of newspaper readers, one could suppose that French reactions to a headline proclaiming 'Chernobyl causes cancers in Corsica' would be similar to British reactions to a headline proclaiming 'Chernobyl causes cancers in Benbecula'. Yet, the reactions in the two countries were not at all similar. In France, Corsica became the linchpin of the debate on Chernobyl self-affectedness, while in Britain, the topic of self-affectedness in the Western Isles disappeared as rapidly as it had appeared, fading into history when reporting on Benbecula ceased.

The reason for this discrepancy can be found in the role state experts respectively played in the two countries, or, more specifically, the confidence people placed in them at the time. As discussed in the previous chapter, trust in official radiation protection experts in Britain was not profoundly called into question or challenged during the Chernobyl crisis, whereas the French public trust in its institutions as well as individual scientists was badly damaged. Therefore, in France, every study undertaken and every report published by radiation protection and health protection agencies on the topic of Corsica only added fuel to the fires of the Chernobyl debate. Critics perceived any release of official evaluations to be an attempt on the part of the public authorities to disguise and bury the true health effects in statistical calculations that would not take into consideration the individual cases and in so doing negate the existence of specific risks associated with certain diets. In Britain, however, the opposite occurred, and the debate on the health effects Chernobyl had had on Benbecula was over the second Dr Robert Kendell, Chief Medical Officer of Scotland, released his statement that it was *'exceedingly unlikely'* that Chernobyl was responsible for the increase in the cancer rate[413] – i.e., the debate was over after only one day. No calls for proof of the statement were made, nor were there requests to first await the final '*expert report*', which was published three weeks after Kendell's initial declaration.[414] By that point, the news value of the report was so low that it was not even mentioned in the article in *The Daily Record* of 23 April 1996 (cited above). Although sceptical of the dismissal of health officials, not even the doctors who had started the debate defended their hypothesis of a possible link between

[413] This quote by Dr Robert Kendell can be found in all articles cited above that were published in the wake of the article published in *The Independent* of 31 March 1996.

[414] To compile this report, Western Isles Health Board officials had checked the records of all general practitioners on Benbecula in order to find if the incidents in cancer were statistically different from the average cancer numbers in Scotland as a whole.

Chernobyl and the increase in cancer rates.[415] In an interview published in the Glasgow-based daily newspaper *The Herald Scotland* on 4 April 1996, Dr Francis Tierney '*said that he and his partner, Dr Andrew Senior, had not sought to make any connection with Chernobyl. He blamed the media for exaggerating the connection because of the forthcoming 10th anniversary of the explosion. Dr Tierney said he regretted the board's haste in dismissing radiation as a possible cause of any rise in cancer cases. He questioned why the board insisted that radiation caused only thyroid and leukaemia-type cancers, adding: "What evidence is there for that? I certainly do not accept that theory."*'[416] But rather than looking further into Dr Tierney's doubts about the underlying assumptions of the Health Board's evaluation of the situation – which would have necessarily included further reporting on the intensive debate on the effects of low-level radiation in the natural sciences – the file on the visible cancer effects of Chernobyl in Britain was so solidly closed that it was not even reopened on the occasion of the 10th anniversary of Chernobyl a couple of weeks later.

This chapter follows the structure used in the previous chapter to examine the national Chernobyl debates and their narratives. In order to focus on the narrative element of self-affectedness, however, the other two elements, 'radiophobia versus apocalypse' and the 'anti-Eastern European/anti-Soviet stereotypes' will take a secondary role. The reason is that – as pointed out in the paragraphs above – perceived self-affectedness, as in what the health effects were from the fallout, never dominated the British Chernobyl debate, whereas in France, it took centre stage, at the latest from 1996 onwards. The aim of this chapter is to closely examine this central difference between the trajectories of the British and French debates.

2.2.1 Public authorities

Britain

In addition to improving the man-machine interface, the other sphere within which action was undertaken in Britain in response to the Chernobyl accident was research in the transport and deposition of radionuclides in the air, water and soil. Several state agencies, universities and private

[415] The crisis management effectuated by Dr Robert Kendell can be considered to be in accordance with what Harry Collins and Trevor Pinch have identified as a strategy of '*paternalistische Beschwichtigung*' ('paternalistic appeasement') inherent to the way British public authorities react towards threats to public health: '*Die Regierung befindet, daß die Gefahr einer Panik gewöhnlich schwerer wiegt als jedes reale Risiko für die Bürger. Daher sieht sie ihre Aufgabe darin, die Befürchtungen der Bevölkerung zu zerstreuen.*' Collins and Pinch considered the British government's reactions on Chernobyl in 1986 and the BSE crisis to be ideal exemplifications of this strategy. See: Harry Collins and Trevor Pinch, *Der Golem der Technologie. Wie unsere Wissenschaft die Wirklichkeit konstruiert* (Berlin: Berlin Verlag, 2000), p. 168.

[416] William Tinning, "Chernobyl fall-out denial over Benbecula cancers," *The Herald Scotland*, 4 April 1996.

research institutes were involved in these projects, these last of which came under the supervision of the Ministry for Agriculture, Fisheries and Food (MAFF). Often, the results of these studies were published by Her Majesty's Stationary Office (HMSO), making them available to the broader public.

Of those studies I was able to gain access to, not one commented on the topic of possible health effects the Chernobyl fallout had had or will have in Britain. The authors cleaved to their researched topic and all comments and observations strictly adhered to the precisely defined parameters, pertaining only to the objectives of the study. This is a decidedly markedly different approach to what may be found in the reports published by French agencies. French state experts in their work on topics related to the fallout almost always included a section or comments connected with the debate regarding possible French Chernobyl victims. This issue was simply not raised in British publications. A silence that is all the more surprising given that the topic of a probabilistic increase in cancer deaths due to the fallout had been discussed already in spring 1986. However, the estimate released by the NRPB in 1986 that the fallout would result in 'a few tens' of deaths in Britain was neither challenged nor taken up in the years to come. Not even the report '*The transport and deposition of airborne debris from the Chernobyl nuclear power plant accident with special emphasis on the consequences to the United Kingdom*'[417] – which even contained the word '*consequences*' in its title – made the slightest mention of the possible effects that this debris could have on the environment and public health. This report provided in-depth information on the quantity of radionuclides that had been deposited in Britain, and the where and when; it included detailed maps and described the progression of the plume over the UK in increments of several hours.[418] The report went on to present model calculations, combining data collected from meteorological observations on rainfall and air pressure with data from measurements of deposition on grass that diverse government departments and the NRPB had collected.[419] From these calculations the researchers were able to generate the total deposition on the United Kingdom.[420] The authors then went on to broach the issue of the fate and behaviour of this deposition, namely in the chapter on '*levels observed in cow's milk*', in which they stated that '*the deposition of I-131 and Cs-137 led directly to incorporation in the human food-chain.*'[421] But the report stopped there. It did not discuss the behaviour of the radionuclides, as it had above, once it entered into the human food-

[417] F. B Smith and M. J Clark, *The transport and deposition of airborne debris from the Chernobyl nuclear power plant accident with special emphasis on the consequences to the United Kingdom.* (Bracknell: Meteorological Office, 1989).
[418] Ibid., p. 14.
[419] Ibid., p. 37.
[420] Ibid., p. 48.
[421] Ibid., p. 49.

chain; it did not speak of the possible total amounts of radionuclides that individuals may have ingested, nor did it contemplate any potential health effects that this food contamination may have induced or may yet induce. In the same way, the section describing the '*longer-term agricultural effects*' stated that, regarding sheep farms, '*even 2 years after the event, levels remain sufficiently high for continued restrictions in some areas.*'[422] However, the authors again did not elaborate further on any risks that may have been linked to the contamination of these animals. Their interest exclusively lay in the composition of the soil in these regions, where the poor acidic soils did '*not lock-in the free caesium so that it becomes unavailable to the vegetation.*'[423] The report clearly identified the central issue to be the unforeseen behaviour of the soil with regard to radionuclide capture and not the radioactive contamination in and of itself. At any rate, Smith and Clark did not consider the radioactive fallout from Chernobyl to be a major hazard even for the most affected regions in Eastern Europe. This can be deduced from the report's first chapter, '*The accident at Chernobyl*'. In this chapter, the authors stated the well-known facts that *'two people died immediately and 29 others died shortly afterwards as a result of severe radiation injuries incurred trying to contain the accident, whilst some 200 other people, mainly station personnel, sustained serious injuries resulting from being exposed to very high levels of radiation,'*[424] but said no word of long-term health effects the radiation could have caused or the probabilistic increase in the incidence of cancer in this area. As they expressed in their conclusion, the Chernobyl fallout was first and foremost an interesting subject and means with which to improve existing models: '*The experience gained from the behaviour of the radioactivity released from Chernobyl into the atmosphere and subsequently deposited on the surface is proving invaluable in the preparation of models, monitoring networks and other procedures for use should another major accident ever occur in the future.*'[425]

These improvements of existing models would prove invaluable not only in the event of a future nuclear accident should occur in an area as far away as the Ukraine was, but the knowledge gained from the Chernobyl 'exercise' would be even more crucial for the survival of the British agricultural business should a severe accident take place in Western European states on the continent or even on British soil. Thus, the objective of the 'self-affectedness' researched by diverse governmental agencies was less intended to evaluate the Chernobyl impact in Britain and its potential health effects, than it was to use the accident as an opportunity to conduct experimental research into the effects of nuclear accidents, or more precisely, into the behaviour of nuclear fallout

[422] Ibid., p. 52.
[423] Ibid.
[424] Ibid., p. 2.
[425] Ibid., p. 53.

in general. This was clearly expressed in a joint publication by the AEA and MAFF. In the report '*Hot particles from Chernobyl*' it was stated that '*the release of hot particles in a severe nuclear accident is shown to be an important factor to be taken into account in nuclear accident contingency planning. Their long-term behaviour in soils, especially with reference to migration and soil-to-plant transfer may be dominant factors in the feasibility of land reclamation.*'[426]

It is interesting to compare this British perspective on the usefulness of Chernobyl related research to the situation in France. Also in France – and the global nuclear sector in general – Chernobyl was primarily considered to be an interesting source of data, which could refine the models based on the data collected after the bombings of Hiroshima and Nagasaki when collated with these last. The difference between the two countries lies in the public response to the experts' approach to Chernobyl, i.e. to see Chernobyl as a source of learning; while no major criticism was elicited in Britain, the opposite may be said of France. French anti-nuclear activists raised harsh criticism against the CORE-programme, a programme that had been initiated by French institutions to monitor and improve the living conditions of people in the most contaminated areas of Eastern Europe. The critics felt that the real motivation underlying this programme was to create a training ground for French radiation protection experts to test out the practicability of their guidelines in real life conditions.[427] They also accused the programme of being an attempt to prove that living in areas with high levels of radioactive contamination was indeed possible, and thus severe nuclear accidents would not be as fatal as most people believed. In Britain, however, where national radiation protection authorities even openly communicated that their main interest in Chernobyl research consisted of preparing themselves for future accidents, this stance never led to wider criticism.

The wide range of studies undertaken by various British research institutes conformed to this approach of taking Chernobyl as an opportunity to review existing models. In addition to investigations into the transport and deposition of airborne radionuclides, transport in water systems, and uptake mechanisms in plants and animals, these studies focused on transport mechanisms in different types of soils. The systematic protraction of the sheep farm restrictions was proof that the existing models were inaccurate. Thus, sizeable amounts of money were spent to measure and collect samples and to adjust the databases and algorithms. In order to give the reader an idea of the scope of this research, a number of theses studies will be mentioned without, however, citing them in detail. They most consisted of pages and pages of measurements followed

[426] F. J. Sandalls, *Hot particles from Chernobyl: a review* (Great Britain, Ministry of Agriculture, Fisheries and Food, 1991), p. 1.

[427] See for example: Stéphane Lhomme, *L'insécurité nucléaire : bientôt un Tchernobyl en France ?* (Barret-sur-Méouge: Y. Michel, 2006).

by a one- or two-page conclusion in which the authors strictly discussed their topic and never referred to broader issues such as the possible health effects of the researched radionuclides, for instance. One example, the report by the Department of Agriculture and Fisheries for Scotland '*Chernobyl accident: Monitoring for radioactivity in Scotland*',[428] published in August 1990, gave a detailed analysis of how much radioactivity may have been taken up according to the amount of beef or sheep meat consumed. However, it said nothing on the possible (or statistical) health effects of this uptake. Other examples of this kind of report include: the MAFF, *Radionuclide levels in Food, Animals and Agricultural Products 1987. Post Chernobyl Monitoring in England and Wales* (1988);[429] Her Majesty's Inspectorate of Pollution, *Chernobyl: Evaluation and radiological assessment of factors affecting drinking water supplies* (1989);[430] Department of Agriculture for Northern Ireland, *Levels of radioactivity in the UK from the accident of Chernobyl USSR* (1986);[431] the AEA, *A survey of radioactive caesium in British soils* (1990);[432] the AEA, *A survey of radioactive caesium in soils in Cumbria and North Lancashire* (1990);[433] Her Majesty's Inspectorate of Pollution, *Measurements of radioactivity form Chernobyl in population groups in Scotland* (1991);[434] the MAFF, *Radioactivity in freshwater systems in Cumbria (UK) following the Chernobyl accident* (1989);[435] the AEA/MAFF, *Hot particles from Chernobyl: a review* (1991);[436] and the AEA, *Transport mechanism and rates for long lived Chernobyl deposits in mid-Wales* (1991).[437]

Some might ask 'why ever would scientists have commented on the possible health effects of the radiation in these reports.' Given that the studies were rooted in the natural sciences and were ideated to examine one specific aspect of a larger question, were the authors to have proceeded to make comments on aspects that did not directly fall within the sphere of their specific research topic, their statements would have amounted to ungrounded speculation. The point here is not to

---

428 Department of Agriculture and Fisheries for Scotland, *Chernobyl accident: monitoring for radioactivity in Scotland* (Department of Agriculture and Fisheries for Scotland, 1990).

429 Ministry of Agriculture, Fisheries and Food, *Radionuclide levels in food, animals and agricultural products 1987: post Chernobyl monitoring in England and Wales* (London: HMSO, 1988).

430 Paul Kane, *Chernobyl: evaluation and radiological assessment of factors affecting drinking water supplies* (Her Majesty's Inspectorate of Pollution, 1989).

431 Department of Agriculture for Northern Ireland, *Levels of radioactivity in the UK from the accident at Chernobyl, USSR on 26 April 1986: a compilation of the results of environmental measurements in the UK* (London: HMSO, 1986).

432 P. A. Cawse and S. J. Baker, *A survey of radioactive caesium in British soils: comparison of accumulations pre- and post-Chernobyl* (Harwell: AEA Environment and Energy, 1990).

433 P. A. Cawse and S. J. Baker, *A survey of radioactive caesium in soils of Cumbria and North Lancashire: comparison of accumulations pre- and post-Chernobyl* (Harwell: AEA Environment and Energy, 1990).

434 B. W. East, *Measurement of radioactivity from Chernobyl in population groups in Scotland: report 2* (Her Majesty's Inspectorate of Pollution, 1991).

435 W. C. Camplin and Great Britain Directorate of Fisheries Research, *Radioactivity in freshwater systems in Cumbria (UK) following the Chernobyl accident* (MAFF, 1989).

436 F. J. Sandalls, *Hot particles from Chernobyl* (MAFF, 1991).

437 P. J. P. Bonnett, *Transport mechanisms and rates for long lived Chernobyl deposits in Mid-Wales* (AEA Technology Environment and Energy, 1991).

criticize the studies or the authors either way, but to highlight the fact that their narrow focus on their research topics reflects the perception of the fallout as a 'neutral object' of scientific interest. This is remarkably different from the French case where research on the Chernobyl fallout from the outset was anything but a neutral topic.[438] As a consequence of the *affaire Tchernobyl* in 1986, any French research on Chernobyl had to locate itself on one or the other side of the debate: either on the side of the 'official experts', who had to defend their expertise against 'the irrational' behaviour of laypersons', or on the side of the 'counter-experts' whose research on Chernobyl aimed to uncover the '*mensonge d'état*' ('state lie') and was frequently connected to an overarching criticism of the French 'nucleocratic' system. For this reason an increase in the literature on Chernobyl was verified from the mid-1990s on, at a time when the debate on French self-affectedness had really begun to gain momentum. In Britain, however, where this debate was marginal, British research activities came to an abrupt halt in the early 1990s. Once 'everything' had been said with regard to the transport and deposition of radionuclides, no further publications were released by British state agencies on the impact of Chernobyl. What this essentially means is that research into 'self-affectedness' in Britain had come to a close before it had even really begun in France.

The fact that the topic of health-related self-affectedness never attained a prominent role in the UK might also be linked to the perception of the fallout's health impact of British doctors. The importance of medical practitioners in relation to the debate on self-affectedness is particularly obvious with regard to Benbecula and Corsica. In both instances, local doctors called attention to the possible connection between a rise in the local incidence of cancer and the Chernobyl fallout. In France, Corsican doctors and their evaluation of the health impact took centre stage in the Chernobyl discourse, while in Britain, this topic was not further investigated or corroborated within the wider group of medical practitioners. In France, this local or regional issue rose to become a national issue, and in Britain it never won a national audience, remaining local news at best. One interesting source that supports this observation with regard to Britain is a publication of the *Institute of Physical Science in Medicine* of 1986 consisting of the proceedings of two round tables that brought together medical physicians from hospitals all over the UK to discuss their experience with the anxiety people had expressed in early May 1986.[439] It is worthy to note that none of the papers presented in these round table meetings dealt with possible health effects of the radioactive fallout. Instead, the papers focused on developing strategies to reassure anxious people that their health was not threatened. A statement in a paper by P.P. Dendy et al. on '*Whole body monitoring in*

[438] Instead of framing how the fallout was handled as 'neutral' or 'non-neutral', it makes sense to apply here Gabrielle Hecht's concept of *nuclearity*, see: Hecht, *Nuclear Ontologies*. For an application of this concept to the Chernobyl debate, see the conclusion of: Bauer/Kalmbach/Kaspersky, *From Pripyat to Paris*.

[439] J. K. Haywood and Institute of Physical Sciences in Medicine, *Chernobyl: response of medical physics departments in the United Kingdom* (London: Institute of Physical Sciences in Medicine, 1986).

Cambridge' clearly illustrates the manner in which problems were allocated: '*Most people monitored were reassured and were most grateful for our help. However, we were inundated by inquiries, which demonstrated that the amount of reassurance required by the public is beyond the resources of an average Medical Physics Department to provide.*'[440] Thus, it was the people's fear of the fallout and not the fallout itself that British doctors considered to be problematic.

It is important to stress that although British nuclear and health experts primarily perceived the Chernobyl fallout to be an interesting research topic or a psychological problem that needed to be resolved, public authorities were also confronted with a decisively concrete challenge caused by the accident: radioactivity in sheep. Heavy rains in the west and north-west of the country in early May 1986 had caused high levels of radioactivity to fall on the ground, and in the highland regions the radionuclides were taken up by grazing sheep. Consequently, sheep farm restrictions were instated in June 1986 and, contrary to the forecasts announced by British radiation protection agencies, these restrictions would not be lifted after just a couple of weeks.[441] In 1999, in fact, there were still 13,000 sheep in Cumbria and 180,000 sheep in North Wales that were subject to the restrictions because their levels of radioactivity were too high for them to go to market.[442] These restrictions continued to be extended in time due to the continued uptake of radionuclides by the sheep. Contrary to the official assumption that the radionuclides would rapidly be locked into the soil and no longer be taken up by the vegetation growing in the top soil – and so would also not be taken up by grazing sheep – the radioactive particles in the highland soil behaved quite differently than predicted. The experts' surprise at this phenomenon is reflected in the number of research projects undertaken to study the transport and deposition of radionuclides in soils, to which I referred above.

However, with the exception of British natural science academia and the farmers' community the topics of sheep farm restrictions and the persistence of radionuclides in upland soil soon sank from public view. Thus, the nuclear industry was able to omit this impact on Britain entirely from its publications on Chernobyl. A telling example is the Watt Committee report of 1988, which was analysed in detail in the previous chapter.[443] Although this report comprised chapters on '*Affected areas of the UK*' and '*Contamination of Foodstuffs*', sheep farm restrictions and the possible health effects of consuming contaminated food were not discussed. The levels of wet and dry deposition

---

[440] Ibid., p. 26.

[441] For more detailed information on the British sheep farm restrictions and Brian Wynne's analysis of the conflict between sheep farmers and state experts see chapter 2.1.3. For a summary of Wynne's work, see: Collins/Pinch, *The Golem at Large*, p. 153-168.

[442] Anne Nisbet, "Management of Chernobyl-restricted areas in England and Wales," in *Radiological Protection Bulletin* 211, (April 1999): 11–15.

[443] Worley/Lewins, *The Chernobyl accident and its implications for the United Kingdom*.

were mentioned as was the research carried out by the MAFF and other government departments, but no study regarding the uptake of radionuclides in British sheep and fish was cited. The same is true for the updated version of this report from 1991, which will be analysed in more detail below. In general, whenever publications from the mid-1990s on made reference to British sheep farm restrictions, they mostly did so to illustrate the geographical range of the fallout; and it seems as though this topic figured more often in international than in British publications. Only a handful of publications are entirely dedicated to this topic, and these are essentially the studies carried out by Brian Wynne.

Asides from the academic STS-community, it was primarily the NRPB that published on British sheep farm restrictions. In 1998, A. S. Nisbet and R. F. M Woodmann compiled a 60-page high-gloss brochure in which they summarized the monitoring programmes that were in place and discussed ways in which the existing compensation scheme could be improved.[444] Yet, this publication considered the issue of radioactivity in sheep to be a predominantly administrative problem to which a cost-effective solution had to be found. Priority was given to the challenge of implementing a more efficient and less expensive monitoring and compensation regime, and questions on the dangers of radioactivity in foodstuffs or on nuclear power and public health were not raised. In this report, the authors played through different possible scenarios for the management of the sheep monitoring system, assessing these options using the following criteria: '*technical feasibility, capacity, cost, impact and acceptability.*'[445] The conclusion the authors reached was that '*the extensive nature of the current restrictions in Wales means that none of the alternative options to mark and release monitoring is practicable*.'[446] Yet, the system currently in place was too expensive due to the large number of animals being monitored. Thus, according to them, there was only one possible solution: '*Priority should be given to reducing the size of the restricted area. It is expected that a comprehensive derestriction survey would identify only a few tens of farms by the use of temporary stockproof boundaries*.'[447] Over the following years this recommendation was indeed implemented[448] and the number of sheep farms subjected to the restrictions was gradually reduced.

But criticisms on how the government was handling the sheep farm restrictions were voiced much earlier than in the late 1990s; it is of note that these criticisms were external of the NRPB.

---

444 Nisbet/Woodman, *Options for the management of Chernobyl-restricted Areas in England and Wales*. A summary of this study was published a year later in the Radiological Protection Bulletin (see footnote 442).

445 Ibid., p. v.

446 Ibid., p. vi.

447 Ibid.

448 It is possible to establish the contamination of a given area with a specific radionuclide (regarding the long-term contamination caused by Chernobyl, the abundant important radionuclide is radiocaesium) by taking soil measurements or by conducting aerial surveys.

The way in which the government had initially implemented the restrictions in 1986 had already been the cause of heated arguments between the public authorities and public scientists on one side and the sheep farmers and landowners on the other.[449] Not long after, however, the object of criticism shifted towards the effectiveness of the restrictions and the underlying policies. The government was accused of using sheep farm restrictions as a way to boost public trust in British foodstuffs – the measures were considered to be a public relations strategy for which the sheep farmers had to pay the price. In an article printed in *The Guardian* in June 1990 this criticism was neatly summed up as follows: '*The most embarrassing thing for the Government is that it is stuck indefinitely with a system of compensating farmers for radioactivity in their sheep which was attractive as a short time measure, but is beginning to look increasingly expensive and questionable. Many scientists believe the restrictions are unnecessary, but politicians fear that removing them could produce a consumer outcry and jeopardize exports. This means that the Ministry of Agriculture is sticking with the scientists and defying public opinion over "mad cow" disease, but disregarding scientists and bowing to public concern over radioactive sheep, even though this has cost the tax payer £ 7 million so far, payed mostly in north Wales*.'[450] Aside from the fact that this quote clearly illustrates how the protraction of the sheep farm restrictions was criticized, it is also interesting for another reason. This quote underpins a hypothesis I presented in the previous chapter: scientists in Britain, unlike their French counterparts, were not considered part of the nuclear techno-political regime. On the contrary, they were perceived to be independent from the government; and the government was perceived to have used them as a pawn in pursuit of its own goals.[451]

When the entire debate over the policies governing the sheep farm regulations are taken into consideration, it may seem less striking that British anti-nuclear groups did not take up this topic to use in their anti-nuclear campaign, although at first it may have seemed to be a perfect anti-nuclear platform. After all, the number of sheep farms subject to the restrictions decreased only thanks to the more accurate identification and localization of hot spots that continued to persist and not to a reduction of the level of dangerous radionuclides in the soil. Moreover, the contaminated soil was located in the most beloved hiking destinations of Britons: the highlands of Lakeland and Snowdonia. Anti-nuclear activists very well could have referred to these hotspots as reminders of

[449] See on this early criticism chapter 2.1.3.

[450] Stephen Cook, "Render unto caesium 134," in *The Guardian*, 1 June 1990, p. 23.

[451] In their summary of Brian Wynne's work, Harry Collins and Trevor Pinch stressed that sheep farmers in Cumbria had also considered the scientists who evaluated the radioactive contamination of the Lakeland as being '*Opfer des politischen Drucks von Seiten der Regierung*' – a government that had waited for a '*perfekten Vorwand wie Tschernobyl, um die bisher verschwiegene Kontamination aus Sellafield darauf abwälzen zu können*'; Collins/Pinch, *Der Golem der Technologie*, p. 167.

what can happen when a severe nuclear power accident occurs even thousands of kilometres away and in so doing could have called attention to the danger of having nuclear facilities just mere kilometres away from Lakeland and Snowdonia. Yet, such a strategy was not adopted by anti-nuclear groups. What is more, in contrast to France, these persistent hot spots were neither considered a threat to public health, nor did they spark a debate about the possible health effects of the fallout. This difference may be explained in part by the fact that the studies carried out on in the contamination of highland soils revealed that the radioactivity levels of 1986 were only partially caused by Chernobyl. On one farm in Cumbria, on which *The Guardian* reported in 1990, '*35 per cent of the caesium came from atmospheric nuclear weapons testing, and 15 per cent from routine discharges from the nearby Sellafield reprocessing plant.*'[452] It is likely that such reporting decreased the public perception of how serious the health threat from Chernobyl was. At the same time, this re-evaluation of Chernobyl fallout discursively underpinned the anti-weapon and anti-Sellafield argument rather than affirming Chernobyl fallout in Britain as an independent anti-nuclear argument of its own. Therefore, public interest in the sheep farm restrictions almost entirely disappeared after the mid-1990s. It is important to note that it was not impossible for people to know about the lasting legacy of the Chernobyl fallout in Britain. Although newspaper reports were rare, some did exist and appeared mostly in the days surrounding the anniversary of the accident in April. But the protraction of the restrictions on sheep farms was not considered a major news event. This can be deduced from the fact that none of the articles made it to the front page, and for some years in the 1990s and early 2000s, no articles on the sheep farm restrictions were even published in *The Guardian* and *The Observer*.[453] From the few articles that were printed, however, it was indeed possible to obtain information regarding the scale of the restrictions and that at least some sheep farmers, whose statements formed an essential part of the articles, were willing to talk about this issue.[454] But there was no further public demand for more information or clarification, and the little information that was reported was not linked in a way to doubts or questions about the national nuclear fleet or criticism of the British radiation protection authorities.

---

[452] Cook, "Render unto caesium 134."

[453] These articles have been accessed through the databases *ProQuest* and *Newsbank* in the British Library, using the search key 'Chernobyl sheep farm'.

[454] See for example: Tony Snape, "Chernobyl pay-out reaches £ 1.7 m," in *The Observer*, 17 September 1989, p. B5; Polly Ghazi, "Chernobyl fall-out may affect British farmland for decades," in *The Observer*, 29 April 1990, p. 9; Robin McKie, "Britain's deadly Chernobyl legacy," in *The Observer*, 21 April 1991, p. 11; David Ward, "Hill farmers living under cloud as effects of Chernobyl linger," in *The Guardian*, 25 April 1994, p. 7; Martin Wainwright, "Ministers deny risk as fallout from Chernobyl lingers in sheep," in *The Guardian*, 30 December 1994, p. 9; Erlend Clouston, "Legacy of night when it rained radiation," in *The Guardian*, 26 April 1996, p. 6; Tony Heath, "Nuclear cloud hangs over the hills," in *The Independent*, 22 April 1996; James Meikle, "Chernobyl legacy lingers down on the farm," in *The Guardian*, 1 May 1999, p. 10.

France

In France, however, the situation was quite the opposite. Media reporting on persistent hot spots of Chernobyl fallout in France almost always included a reference to the *affaire Tchernobyl*. Thus, the material legacy of Chernobyl fallout in France was discursively embedded in the criticism of the French techno-political regime and particularly in those instances in which the credibility of the radiation protection authorities was called into question. The moment they proclaimed in 1986 that the fallout would have no negative impact in France, radiation protection authorities became central actors in the French debate on Chernobyl health effects. The research they conducted in the following years was primarily intended to prove that their initial evaluation had been correct. In this regard, for instance, the IPSN annually published, from April 1996 on, a dossier on the state of the art of Chernobyl research; the IPSN never failed to assert in the conclusions that the whole debate about visible health effects in France was pointless. But every comment released by state experts with regard to Chernobyl induced health effects only succeeded in fuelling the debate by providing critics with a new occasion to lambaste the official evaluation.

The debate on the possible health effects in France of the Chernobyl fallout had already surfaced by the second week of May 1986 hand in hand with the *affaire Tchernobyl*. The logic underpinning the position of the critics was: if French public authorities had lied with regard to the true levels of fallout that hit France, then the revelation that the fallout had been even more intense would consequently imply that the threat to public health was greater than experts had led the public to believe. However, shortly after May 1986 this debate lost force. Fodder for debate was removed when the public authorities wrapped up its investigation and analysis of Chernobyl. Critical voices like CRIIRAD continued to call for a re-evaluation of the fallout intensity, but this never happened; the public authorities had effectively blocked further criticisms by eliminating the spaces and occasions in which critics could dispute their official evaluations. The French nuclear industry also adjusted its behaviour and began to refrain from advertising the origin of French electricity supply. Thus, the whole topic of nuclear energy became less visible in the public sphere during the late 1980s, which made it more difficult for critical voices to mobilize and bring a broader audience to their cause. Therefore, anti-nuclear activists and critics directed their efforts against various incidents that had occurred in French nuclear power plants as well as the strongly contested construction of the fast breeder reactor *Superphénix*. As in many other European countries, French public institutions drafted a series of reports on Chernobyl for the national government and international organizations such as the IAEA. But these reports barely attracted any attention outside academic and political circles, and furthermore did not incite the production of 'counter

literature'.

In the early 1990s and even more so in 1996, when the question of the impact of the Chernobyl fallout on France itself was 're-discovered' by a broader public this all changed. On the occasion of the 10th anniversary of Chernobyl, the public radiation protection agency IPSN published a detailed information brochure that was primarily directed toward journalists.[455] In this brochure, the nuclear experts repeated their evaluation of the situation in 1986 declaring that, after ten years, there was still no evidence that the French government and the French scientific elite had committed any errors.[456] This brochure did not have the desired effect and was used by journalists less to praise French clear-sightedness and more as a newsworthy statement to remind their readers of the *affaire Tchernobyl* and to point out that the contested official narrative had not changed even over time. Another event at the end of 1996 decisively launched Chernobyl from its allotted position in the past directly into the present: In the Vosges, a hunter shot a wild boar, which when subjected to a completely random veterinary analysis, proved to be significantly contaminated. Tests and measurements in the surrounding forest were carried out and mushrooms and berries were also found to show far higher rates of radioactivity than would have been normal for this region. Thus, in 1996, the legacy of the Chernobyl fallout in French soil reared up to made its public appearance. The boar incident sparked a search for other hotspots. Measurements were taken in areas that had received high rainfall in 1986, and CRIIRAD revealed that hotspots could be found not just in the Vosges, but also in the Mercantour (close to the Italian border) and on Corsica. Concurrent with this search for the still-present radionuclides in French soil, was an active search for the French victims of this radiation; a search that focalized on the claims by local doctors on Corsica that they had seen increases in thyroid diseases in children after the Chernobyl plume had passed over Europe.

In an attempt to bring an end to the speculations about the 'true impact' of Chernobyl in France, the *Direction de la sûreté des installations nucléaires* (DSIN) and the *Direction générale de la santé* (DGS) commissioned the IPSN and the OPRI – the successor to the SCPRI – to provide a synthesis of all the information currently available on the effects Chernobyl had had in France.[457] In November 1997, the IPSN and OPRI delivered their report.[458] By compiling the various groupings of data from the different agencies and institutions, the IPSN and OPRI were able to generate a map of France indicating the total fallout deposition. With regard to some regions, this map varied significantly from what the SCPRI had presented to the public in 1986. The authors of the 1997

[455] IPSN, *Tchernobyl, 10 ans après — dossier de presse* (Fontenay-aux-Roses: IPSN-Mission communication, 1996).
[456] For an analysis of this brochure, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 93.
[457] The following account is a summary of: Kalmbach, *Tschernobyl und Frankreich*, pp. 95-99.
[458] IPSN (Ph. Renaud, K. Beaugelin, H. Maubert, Ph. Ledenvic), *Conséquences radioécologiques et dosimétriques de l'accident de Tchernobyl en France* (Fontenay-aux-Roses: IPSN, 1997).

IPSN-OPRI report emphasized that the levels of radioactive contamination of foodstuffs had exceeded the safety levels in 1986; they also communicated that there were constellations in which the contamination levels of foodstuffs, and especially mushrooms, could continue to exceed the defined safety limits even in 1996. The report contained extreme case scenarios on the specific diets of people living in the particularly exposed regions of the Vosges, Mercantour, and Corsica. The kind of sanitary effects these doses might have had on the population, however, was not discussed. Like their British colleagues, the French scientists rigorously remained within the bounds established by their topic: their task was to conduct a radio-ecological and dosimetric analysis of the fallout, not a study on low-level radiation health effects.

When the report was published as a book two years later,[459] the authors felt compelled to include a statement on the health-related effects of the fallout; they had felt the pressure of the French Chernobyl debate. In the conclusions of the 1999-edition, the authors stated that it might indeed be justified to commission an epidemiological study of thyroid cancers in the children of some specific regions in France, but not because the estimated doses seemed to result in observable negative health effects, rather as a means to give a clear response to the multiple inquiries into this topic by the population and medical practitioners.[460] The foreword to the book by the DSIN's director, André-Claude Lacoste, was as much a concrete statement of the French Chernobyl debate as was the book's conclusion. He wrote: '*I have walked away with several important lessons from this book: with regard to the estimated doses, the influence of the fallout from the Chernobyl catastrophe in France has remained below a level that could have provoked a justified reaction on a sanitary plan*.'[461]

But the critics of the official narrative on French self-affectedness, in particular CRIIRAD and numerous people who were suffering thyroid diseases, in no way considered this study to be proof that there were no observable health effects in France. According to these critics, the IPSN's publications were rather proof that the French *nucléocratie* continued to try to cover up their lies of 1986. In response to these tenacious accusations, the *Direction générale de la santé* (DGS) commissioned the IPSN and the *Institut de veille sanitaire* (InVS) to compile a report on the sanitary effects of the Chernobyl fallout in France. The IPSN and the InVs delivered this report in December 2000.[462] However, an epidemiological study was not carried out and the results published

[459] Philippe Renaud et al., *Les retombées en France de l'accident de Tchernobyl: conséquences radioécologiques et dosimétriques* (Les Ulis: EDP sciences, 1999).

[460] Ibid., p. 140.

[461] Ibid., p. IV: '*Je retire de cet ouvrage plusieurs enseignements essentiels: au regard des doses estimées, l'influence des retombées de la catastrophe de Tchernobyl en France est restée en dessous d'un niveau qui aurait pu susciter une réaction justifiée sur un plan sanitaire.*'

[462] IPSN and InVS (P. Verger, L. Chérié-Challine), *Évaluation des conséquences sanitaires de l'accident de Tchernobyl en France* (Saint-Maurice: InVS, 2001). At the same time the full report was released, a synthesis was also

in the report were derived from modelled calculations based on the IPSN's 1997 report on the radio-ecological and dosimetric consequences of the fallout in France. The authors stated clearly from the beginning that such calculations were very problematic given there was so little knowledge about the health effects of exposure to low-level radiation, and this was particularly true when speaking of internal exposure. In spite of this admitted lack of scientific knowledge, the report came to the conclusion all the same that an increase in thyroid cancers in children in France provoked by the Chernobyl fallout would not be an observable. Even were some individual cases to exist, they could not be discerned from the total amount of naturally occurring thyroid cancers.[463] The report readily admitted that there had been a measurable and observable increase in thyroid cancers in adults, but went on to state that this increase was not a phenomenon of national scope but had been observed at the global level. Moreover, because this increase had already manifested prior the Chernobyl accident, its occurrence could not be attributed to the Chernobyl fallout. As such, no explanation had been found thus far for the increase.[464]

This evaluation that it was not possible to establish a connection between these thyroid illnesses and the Chernobyl fallout on the French territory did nothing to convince CRIIRAD and the many French citizens that were afflicted with thyroid diseases. This was why the *Association Française des Malades de la Thyroïde* (AFMT) together with CRIIRAD filed a suit in 2001 at the *Tribunal de grande instance* (TGI) of Paris.[465] The claim was: '*failure to protect the French people in general and groups of risk in particular against the radioactive fallout of the Chernobyl accident*.'[466] The claim made by the AFMT and the CRIIRAD was supported by numerous single claims and later supplemented by class action suits, which resulted in a number of complainants involved in this case of approximately 500 individuals in 2006.[467] This claim and other individual claims were brought primarily against Pierre Pellerin but also members of the French government of 1986.[468] In reaction to the severe public criticism brought forward against Pierre Pellerin, many

published: IPSN and InVS (P. Verger, L. Chérié-Challine), *Évaluation des conséquences sanitaires de l'accident de Tchernobyl en France – synthèse du rapport* (Saint-Maurice: InVS, 2001).

463 Ibid., p. 17: '*Les excès de cas estimés sont inférieurs ou comparables aux incertitudes sur l'estimation du nombre de cancers spontanés: ces excès devraient dès lors être difficilement détectables du point de vue épidémiologique*.'

464 Some anti-nuclear activists blame this increase to be the direct result of the global weapons testing fallout.

465 For a detailed analysis of this court case, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 116. The court took its decision in September 2011: the claim was dismissed. This decision was followed by strong public criticism and was widely covered by the French media (see for example *Le Monde* and *Libération* of 7 September 2011). Not only was the decision as such contested but also how the case was processed and the dismissal of the *juge d'instruction* Marie-Odile Bertella-Geffroy, who had taken the arguments of the plaintiffs seriously and had also invited experts external to the French nuclear sector to testify. After ten years of investigations she was dismissed in March 2011 and, within months, the case as such was dismissed as well.

466 Original phrasing: '*Défaut de protection des populations françaises en général et des groupes à risques en particulier contre les retombées radioactives de l'accident de Tchernobyl.*'

467 CRIIRAD and AFMT, *Communiqué joint: Mise en examen du Pr Pellerin pour tromperie aggravée dans le dossier Tchernobyl / malades de la thyroïde*, 1 June 2006.

468 Since the late 1990s, it has become increasingly more common in France to bring claims against politicians and hold

professionals of the French nuclear sector openly took his side. Thus, with the advent of the 2000s, the debate about the health effects Chernobyl had in France got entangled in juridical proceedings and also with this public side-taking in favour of either the complainants or the accused. The question of the experts's credibility and responsibility had to a great deal become a question of personal accountability – that and a question of monetary compensation.

2.2.2 Nuclear power industry

France

EDF

After the EDF published its 1986 brochure – discussed in the chapter above – the company made no further communications about Chernobyl to a broader public. One important reason that may have underpinned this decision may have been that the EDF did not want to unintentionally create any links between its own activities and the accident. As a general rule, the company did not place particular emphasis on the source of French electricity during the late 1980s. This changed, however, in the early 1990s when nuclear power became the focal point of the EDF's advertising and PR campaigns.[469] It was at the same time, in 1992, that the EDF published an information brochure on Chernobyl for its employees.[470] This brochure offers a very clear narrative of Chernobyl, given it consisted mainly in the classification of information that had been published in media reports: it identified which were '*true*', '*false*' and '*uncertain*'. One piece of information that had been classified as '*true*' was that the cause of the accident was to be attributed to human failure and faulty reactor design, the RBMK, which was different from French plants.[471] The statement that child mortality had increased in the most contaminated areas in Eastern Europe, however, was labelled '*false*', and on the contrary, the brochure stated that the infant mortality rate had actually gone down thanks to improved medical surveillance.[472] The claim that there was an increase in cancer rates because of radiation from Chernobyl was also classified as '*false*'. The observed increase in thyroid cancer in Belarus was only due to an increase in cancer screening.[473] In general,

them legally responsible for the negative outcomes of their decisions, see: Violaine Roussel, "Scandales et redéfinitions de la responsabilité politique. La dynamique des affaires de santé et de sécurité publiques," in *Revue française de science politique* 58, 6 (2008): 953-983.

469 For the EDF's communication on nuclear power and in particular the campaign '*Aujoud'hui, 75% de l'électricité est nucléaire*', see: Topçu, *L'agir contestataire à l'épreuve de l'atome*, pp. 310.

470 The analysis of this brochure is adapted from: Kalmbach, *Tschernobyl und Frankreich*, pp. 89-90.

471 EDF, *Tchernobyl: le vrai, le faux et l'incertain* (Paris: EDF, 1992) p. 2.

472 Ibid., p. 7.

473 Ibid., p. 6.

the causal association between the many manifest illnesses in the part of the population living in the most contaminated areas and the radioactive fallout from Chernobyl was to be considered '*false*'. Instead, these illnesses were really '*linked to stress, the modification of daily habits, and the poor quality of nutrition.*'[474] In this regard, the narrative presented in the EDF brochure of 1992 clearly drew on the concept of radiophobia. It also played on anti-Eastern European/anti-Soviet stereotypes insofar as it asserted that the (Western) medical aid brought to the most contaminated regions after the Chernobyl accident was far more advanced than what the Soviet health system was capable of providing. Regarding the aspect of self-affectedness, the EDF brochure took a clear and decisive position: any information stating that the public authorities had denied the presence of fallout on French soil was '*false*'. The brochure went on to assert that the opposite was true, that on 30 April 1986, the SCPRI had send a communiqué to the press agencies stating that the radioactive plum had reached France.[475] The brochure, however, did not limit itself to discussing and taking a stance on the radioactive fallout in France. The EDF took an active position regarding the health effects of this fallout, asserting: It was '*false*' that Corsica was one of the most contaminated areas in all of Europe; and the thyroid cancer rates on the island were not abnormally high.[476] Once it made these points clear to its employees, the EDF published no further statements on Chernobyl. However, the EDF continued to systematically distance itself and its activities from the accident. Regarding the 20th anniversary of Chernobyl, this behaviour will be discussed in more detail in the following chapter.

Britain

The Watt Committee on Energy

In 1991, on the occasion of the 5th anniversary of the accident, the Chernobyl working group of the Watt Committee came together once again to review the material that had been published on Chernobyl in the meantime and to present a compendium of the reports they judged trustworthy.[477] The Committee clearly stated its motives: '*the material published by the popular media often fail[ed] to separate clearly opinion from fact or to give due weight to the important as compared to the trivial.*' Thus, given this state of affairs, the Watt Committee intended to take on the role of independent expert in the Chernobyl debate once more so that it could inform the public in a purely scientific and neutral manner what information was true and what was false. In the foreword, the

[474] Ibid., p. 7: '*liés au stress, à la modification des habitudes de vie, et à la mauvaise qualité de l'alimentation.*'
[475] Ibid., p. 10.
[476] Ibid., p. 11.
[477] Watt Committee on Energy, *Five years after Chernobyl. 1986-1991: a review* (London: Watt Committee on Energy, 1991).

authors clearly stated what kind of reports they considered to be trustworthy – thus the foreword provides us with an interesting insight into what the authors considered to be unbiased: '*It is the Watt Committee's experience that, at least in the United Kingdom, technical experts in the nuclear industry present frank and objective reports, certainly as far as publishing data. The IAEA presents material which is reliable although it is an organisation which publicises the world nuclear scene as well as regulating and inspecting installations. The British official bodies such as the National Radiological Protection Board also have no interest in promoting the nuclear case.*' The Watt Committee's account of how the accident unfolded, the release of radiation into the atmosphere, and the effects on health and the environment was thus based on reports, papers, and press releases published by the IAEA, the NRPB, the UKAEA and other official institutions as well as on articles published in scientific journals such as *Health Physics* and *Radiation and Health*.[478] To a large extent, the interpretation of the Chernobyl accident and the narrative presented in the report were identical to those in the Watt Committee's publication of 1988. The death toll, for instance, had remained unchanged at 31. Yet, the denomination '*volunteers*' had now been put into quotation marks, indirectly implying that the Soviet crisis management of the accident had been less than democratic. However, the Committee continued to maintain that there were no health effects observable in this group. Although they stated that '*no special checks on the health of those engaged in the clean-up operations have been published in the review material*,' some sentences further down they specified: '*there is no reason to anticipate any radiation linked health problems with the clean-up workers as long as the published irradiation doses are realistic.*'[479] Regarding health effects in evacuees and people living in the most affected regions, the authors not only gave an 'all-clear' – essentially dismissing that there had been any negative health effects on these groups – but declared that the health situation in children had even improved. Under the section title '*Birth Defects and Increase in Birth Mortality*' they cited a representative of the Kurchatov Institute in Moscow saying that '*growth in infant mortality rate has not been observed in the contaminated regions since 1986 and in most cases has been reduced*.' Furthermore, '*in Gomel, infant mortality decreased from 16 per thousand in 1985 to 12 per thousand in 1988.*'[480] On leukaemia and other cancers, the authors were brief, because, as they explained, '*there are no reports at this stage, or data, on cancer incidence in the area.*'[481] The Committee did release more statistical information on thyroid cancer and asserted that the 17 thyroid cancer cases that had been verified between 1986 and mid-1989 were '*in reasonable agreement with the prediction.*'[482] Despite the fact that no detailed

[478] For a comprehensive overview of the sources used for this report, see the list of reference: Ibid., pp. 45.
[479] Watt Committee on Energy, *Five years after Chernobyl*, p. 26.
[480] Ibid., p. 29.
[481] Ibid., p. 32.
[482] Ibid., p. 31.

data was available, the authors affirmed all the same that '*there is no reliable evidence that harmful health effects had been observed by June 1990.*'[483] The Committee's consequent statement regarding Western and Southern Europe conformed to its evaluation of the health situation in Eastern Europe: '*The medical effects of the fallout over Western and Southern Europe must be small and undetectable.*'[484]

Therefore, there were no particular discrepancies between this publication and the narrative expressed in the 1988 report. However, one new element was included in the 1991 publication: the authors added an eloquent description of the concept of 'radiophobia'. By this time, 'radiophobia' had already been renamed and now figured under the expanded and more 'politically correct' term 'post-Chernobyl stress-induced illnesses'. Although the word 'radiophobia' itself only appeared in the last paragraph of the conclusion of the Watt Committee report, the concept as such was paraphrased throughout the text. For instance, the authors extracted the information from a 1991 Red Cross Survey that '*psychological stress and anxiety was evident in the Red Cross team who found that people were anxious to know their radiation dose and about future pregnancies.*'[485] Within the context of a summary of an IAEA report from November 1989, the Watt Committee similarly quoted Morris Rosen (Head of the IAEA's Department of Nuclear Safety) saying that '*the health effects reported as the outcome of Chernobyl may be due to factors other than radiation […]: deficient diet, increase in medical examination, better diagnostic technique and added stress and anxiety arising from the current uncertainties.*'[486] Finally, in their conclusion, the authors of the Watt Committee report gave a name to the interpretative frame they had applied throughout their assessment of the health situation in the most affected regions and presented their recommendation for concrete action. They concluded the report with the words: '*While the radiation linked to illnesses is likely to be low because of the timely precautions taken by the authorities, these same precautions, and the lack of credible information, have led to a serious decline in the general health of the population, at one time called "radiophobia". […] The way that radiation is dealt with by the media, the obscure terminology and the links with cancer has led to an exaggerated fear of small doses of radiation. One of the lessons of Chernobyl is that it is urgent to present powerfully in an easy to understand form a balanced view on the health impact of low level radiation.*'[487]

---

[483] Ibid., p. 33.
[484] Ibid., p. 36.
[485] Ibid., p. 33.
[486] Ibid., p. 37.
[487] Ibid., p. 44. With regard how Chernobyl health effects should be addressed, the report had already provided a clear answer at the very beginning, p. viii: '*Whether there has been "cover up" is more difficult to determine; ultimately there has to be an assessment of the care that can be given to those who might be affected. It is not feasible to extend limitless funds on correcting some perceived defect and it is naïve to suppose that such an absolute can be sustained.*'

The Watt Committee report also presented a very clear narrative of the impact of the Chernobyl fallout in Britain. The authors indeed cited the amount of fallout that had passed over and settled on British soil and elaborated that '*while in Southern England, where there was little rain while the plume was overhead, radiation levels were 100 – 1,000 Bq/m2, wet deposition of Caesium 137 in Cumbria and South of Scotland gave levels from 10,000 to 25,000 Bq/m2.*'[488] A map showing the wet and dry depositions of Caesium 137 in the UK was inserted. However, the authors absolutely made no mention of the possible health effects of these radionuclides in humans, not even in the chapters on '*Environmental effects*' and '*Farms*'. Thus, while it clearly classified the debate on Chernobyl health effects in Eastern Europe as radiophobic, the Watt Committee report provided at the same time a clear statement negating the perception of health-related self-affectedness in Britain.

2.2.3 Anti-nuclear groups and other critical voices

France

GSIEN and CRIIRAD

Amongst the first to contest the official French statements on Chernobyl's impact, the activists from the GSIEN continued to call into question the official evaluations on the impact of the accident. In particular two GSIEN activists, Bella and Roger Belbéoch, followed this issue closely. In the 1980s, Bella and Roger Belbéoch were among the most known and publicly visible French anti-nuclear activists and would go on to found the *Comité Stop Nogent* in 1987. From the start, the Belbéochs were involved in the French Chernobyl debate. In May 1986, Bella Belbéoch had contributed an article to *Écologie*, the magazine of the *Société Française d'Écologie*. Her predictions on the trajectory of the official evaluations of Chernobyl became a common point of reference for critical voices in the French Chernobyl debate. On 1 May 1986, she wrote: '*In the coming days, we can expect an international complot of official experts who will try to minimize to the maximun the number of victims of this catastrophe. The continuance of the civil and military nuclear programmes imposes on the collectivity of states a tactical complicity that exceeds ideological or economic conflicts. The international health organizations, which are in principle independent from the states but strictly controlled by the Great Powers, will serve as liaison agencies to uphold the appearance of objectivity and neutrality*.'[489] Because of this concern, Bella and Roger Belbéoch

[488] Ibid., p. 17.

[489] Bella Belbéoch, "Le complot international," in *Écologie*, 371 (1986): '*Il faut s'attendre dans les jours qui viennent à un complot international des experts officiels pour minimiser au maximum l'évaluation des victimes que causera*

continued to closely follow the work and reports of the international committees and expert groups that had been put in charge of evaluating the impact of Chernobyl in the most affected regions in Eastern Europe. In so doing, Bella and Roger Belbéoch paid careful attention to the publications released by the WHO and the IAEA. In 1992, in their contribution to the first edition of the journal *L'Intranquille*, they addressed the wider public with their strong criticism of the official narrative of the impact of Chernobyl that had been diffused at the international level.[490] The following year, a revised and expanded version of this article was published as a book.[491] In this publication, Bella and Roger Belbéoch addressed various aspects of the Chernobyl issue: the contemporary situation in the most affected regions, the struggle to define the dose limit for evacuation, the changing estimates of the number of victims, the alienation strategies applied in the West, and so on. A central aspect of their argument consisted in the contestation of the 'radiophobia' concept that had figured prominently in the evaluations of the Soviet and international experts groups. In the chapter '*Le complot international*' ('The international conspiracy') the authors incorporated all of the various aspects on Chernobyl they had presented into one central claim: '*There is nothing surprising about what is happening at the moment within the circle of experts*.'[492] As Bella Belbéoch had predicted in her article in *Écologie* in 1986, all Chernobyl-related activities and communications were aimed at protecting the international civil and military enterprise from being profoundly called into question: '*The complicity of the Western experts, scientists, technicians, doctors, sociologists and specialists in humanitarian aid was, without reservations, aimed at helping the central power to 'manage' the social, economic, and political crisis that had emerged as a consequence of the accident. It was necessary to convince the people living in the contaminated areas that they had nothing to fear for their health. Those who were sent to 'liquidate' the consequences of the catastrophe at the site itself were not to question the doses of radiation they received or would receive. The rapid re-start of the undamaged reactors provided the proof that there was nothing to fear from nuclear energy*.'[493]

---

cette catastrophe. La poursuite des programmes civils et militaires impose à l'ensemble des États une complicité tacite qui dépasse les conflits idéologiques ou économiques. Les organismes internationaux de la Santé, en principe indépendants des États mais strictement contrôlés par les grandes puissances, pourront servir d'organes de liaison entre celles-ci tout en maintenant une apparence d'objectivité et de neutralité.' Translation by Karena Kalmbach from the quotation in: Corinne Castanier, "Contamination des sols français par les retombées de l'accident de Tchernobyl – les preuves du mensonge." In *Contaminations radioactives: atlas France et Europe*, ed. by CRIIRAD/A. Paris (Barret-sur-Méouge: Éditions Yves Michel, 2002), p. 7.

490 Bella Belbéoch and Roger Belbéoch, "Tchernobyl, une catastrophe. Quelques éléments pour un bilan," in *L'Intranquille, une libre contribution à la critique de la servitude*, 1 (1992): 267-373.

491 Bella Belbéoch and Roger Belbéoch, *Tchernobyl, une catastrophe. Quelques éléments pour un bilan* (Éd. Allia: Paris, 1993). A re-edition of the book is envisaged and the text is available online: http://www.dissident-media.org/infonucleaire/Tchernobyl_une_catastrophe_1993.pdf

492 Belbéoch and Belbéoch, *Tchernobyl, une catastrophe*, p. 17 (online edition): '*Ce qui se passe actuellement dans les milieux d'experts n'a donc rien de surprenant.*'

493 Ibid.: '*La complicité des experts occidentaux, scientifiques, techniciens, médecins, sociologues, spécialistes en actions humanitaires fut sans réserve pour aider le pouvoir central à « gérer » la situation de crise, sociale, économique, poli- tique, conséquence de l'accident. Il était nécessaire de convaincre les gens vivant dans les zones*

Although the book focused entirely on the (health) impact of Chernobyl in Eastern Europe and did not tackle the radioactive fallout in France, the discursive impact Chernobyl had had on the French nuclear debate was indeed addressed: '*For a long time our experts were the primary providers, if not the producers, of information. They simply denied the catastrophe, reduced the event to some 30 victims. But it was impossible to conceal the mass evacuations, and the non-return of the people to their homes was clear proof the soil decontamination had failed utterly. Because the reality of the catastrophe could not be denied, the discourses changed: Chernobyl had indeed been a major catastrophe, but its objective consequences were minor*.'[494] As had the early critical voices in Britain, Roger and Bella Belbéoch directed their criticism toward the global nuclear policies at stake in the official Chernobyl narrative. The difference was that while the aspect of possible health effects from low-level radiation exposure was central to their analysis, this issue had barely been debated in detail in British publications and had mostly been referred to only as an 'unresolved question'.

In addition to the 1993 book written by Roger and Bella Belbéoch, various articles on Chernobyl appeared in GSIEN's magazine *La Gazette Nucléaire*. Their work scrutinizing and criticizing the official Chernobyl narratives provided by international expert groups was flanked by Soviet dissident voices that had been made available to the French audience.[495] In 1990 Grigori Medvedev's book on the causes of the accident was published in France,[496] and in 1993 Alla Yaroshinskaya's book followed suit.[497] These examples illustrate how, in the early 1990s, focus had been placed on the revelation of the 'truth about Chernobyl' with regard to Eastern Europe. Only after the 10th anniversary of the accident public interest turned to the question of the 'true' impact of Chernobyl in France.

It was the CRIIRAD who took the leading role in the struggle to reveal the 'true' level of contamination in France. It was specifically with this aim that the organization was founded by Michèle Rivasi in May 1986. The 1997 report released by the IPSN on the impact of Chernobyl in France (discussed above) was proof to Michèle Rivasi and the CRIIRAD that since the Chernobyl

---

contaminées qu'ils n'avaient rien à craindre pour leur santé. Ceux qu'on envoyait « liquider » les conséquences de la catastrophe, sur le site même de Tchernobyl ne devaient pas s'interroger sur les doses de rayonnement qu'ils recevaient ou allaient recevoir. Le redémarrage rapide des réacteurs non endommagés de la centrale fournirait la preuve qu'on n'avait pas à craindre l'énergie nucléaire.'

494 Ibid.: '*Pendant longtemps nos experts furent les fournisseurs, pour ne pas dire les producteurs, prioritaires des informations. Ils niaient tout simplement la catastrophe, réduisant le bilan à une trentaine de victimes. Mais il n'était pas possible d'escamoter les évacuations massives, et le non-retour des populations chez elles était manifestement la preuve de l'échec total des techniques de décontamination des sols. Comme la réalité de la catastrophe ne pouvait être niée, les discours changèrent : Tchernobyl avait bien été une catastrophe majeure, mais ses conséquences objectives étaient mineures*.'

495 This aspect is considered in detail in chapter 3.1 on '*Voices from the East and their reception in the West*.'

496 Grigori Medvedev, *La Vérité sur Tchernobyl* (Paris: Albin Michel, 1990).

497 Alla Yarochinskaya, *Tchernobyl, vérité interdite* (La Tour-d'Aigues: Éditions de l'Aube, 1993).

accident, not only had nothing changed, the French radiation protection agencies were still not to be trusted. A book that Michèle Rivasi published together with Hélène Crié in 1998 clearly expressed this opinion: '*Twelve years later, in defiance of some attempts to appear more 'transparent', the nuclear authorities have not changed how they function: disinformation and incompetence remain the rule*.'[498] Thus, the only way to reveal the truth was to carry out independent studies. And this is precisely what the CRIIRAD had been doing for years in the south-east of France and in Corsica. However, in order to incorporate these selective studies into one comprehensive map the CRIIRAD commissioned geologist André Paris, in 1999, to take soil samples from all over France. In 2002, the results from CRIIRAD's various measurements and analyses were published in the book *Contaminations radioactives: atlas France et Europe*.[499] With this publication, the editors pursued a clear goal: '*This atlas of reference provides unpublished maps and information, which are useful for anybody who wants to understand the debate on the sanitary consequences of the Chernobyl catastrophe*.'[500] The first part of the book was written by CRIIRAD's director, Corinne Castanier. Castanier not only mentioned the *affaire Tchernobyl* of 1986 and the history of CRIIRAD but also compared the official numbers regarding the radioactive contamination in France that had been published by the public authorities with the results of the studies conducted by the CRIIRAD. The subtitle to her chapter anticipated her conclusion: '*Les Preuves du Mensonge*' ('the proof of the lie'). According to the CRIIRAD, the largest most serious lie that had been told consisted in the fact that in early May 1986 the SCPRI had declared that the readings needed to be 10,000 to 100,000 times higher before significant problems of public hygiene would begin to manifest.[501] From CRIIRAD's point of view, however, the atlas proved that the readings had indeed been high enough to call for safety measures. Thus, by taking an uncompromising position against the adoption of any safety measures in early May 1986, French public authorities had wilfully exposed the people to a health threat.

AFMT

---

498 Michèle Rivasi and Hélène Crié, *Ce nucléaire qu'on nous cache* (Paris: Albin Michel, 1998), p. 113: '*Douze ans plus tard, en dépit de quelques tentatives pour paraître plus 'transparent', le fonctionnement des autorités nucléaires n'a pas varié: la désinformation et l'incompétence restent la règle*.'

499 CRIIRAD and André Paris (eds.), *Contaminations radioactives: atlas France et Europe* (Barret-sur-Méouge: Éditions Yves Michel, 2002). For a detailed analysis of this publication, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 100-103.

500 CRIIRAD/Paris, *Contaminations radioactives: atlas France et Europe*, back-cover of the book: '*Cet atlas de référence fournit des cartes et des informations inédites utiles à tous ceux qui veulent comprendre le débat sur les conséquences sanitaires de la catastrophe de Tchernobyl*.'

501 In several points in the text, Corinne Castanier stated that a communiqué published by the SCPRI had contained the sentence: '*Il faudrait imaginer des élévations 10.000 à 100.000 fois plus importantes pour que commencent à se poser des problèmes significatifs d'hygiène publique*.'

The claim that French public authorities had wilfully exposed people to a health threat – more specifically one that targeted the thyroid – was met with marked interest amongst those who suffered thyroid diseases. Because the thyroid gland is very receptive to radioactive iodine, exposure to this radionuclide can cause severe illnesses and even cancer in this organ, especially in people exposed at a younger age. A global increase in the number of those with thyroid diseases is a phenomenon that pre-exists Chernobyl and that has eluded all attempts on the part of physicians to find an explanation.

In 1999, some French patients founded the *Association Française des Malades de la Thyroïde* (AFMT). That same year, at the general assembly of the organization, the members were offered a concise explanation for their illnesses: Jean-Michel Jacquemin presented them his book '*Ce fameux nuage... Tchernobyl, la France contaminée*', in which he proclaimed his theory that the increase in thyroid diseases in France was a result of the Chernobyl fallout. Details of Jean-Michel Jacquemin, his publications, and his role in the French Chernobyl debate are discussed below (see chapter 2.2.4). What is important in relation to the AFMT is the fact that Jean-Michel Jacquemin was able to convince many AFMT members of the veracity of his theory: the support group partly transformed into a group of complainants, which two years later and together with the CRIIARD filed a suit in the French courts for '*failure to protect the French people in general and groups of risk in particular against the radioactive fallout of the Chernobyl accident*.'

AFTM activities provoked such severe criticism among French radiation physicians that, in 2005, a group of approximately 50 doctors ran an advertisement in the *Libération* to publicise a manifesto.[502] The manifesto was addressed to '*people with thyroid diseases who ascribe their illness on the passage of the radioactive cloud over France in 1986*'[503] and emphatically communicated: '*NO, there is no Chernobyl effect in France*.'[504] According to this manifesto, the worst effect of this whole debate was that many people began to challenge or call into question the expertise of their doctors and put their health at risk by looking for absurd explanations for their illnesses. The text concluded with the clear identification of who was responsible for what they felt were absurd claims: '*These sick persons are the hostages of an anti-nuclear and juridical-medical lobby*.'[505]

Although, from the mid-1990s on, the French debate on Chernobyl health effects focused very much on the effects in France, public interest in Chernobyl health effects went hand in hand

[502] For more information on the AFMT and the manifesto that was directed against its activities, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 110-113.
[503] Libération, "Message aux malades de la thyroïde...," 19 November 2005, p. 10: '*malades de la thyroïde imputant leur pathologie au passage en France du nuage radioactif en 1986 après l'accident de Tchernobyl*.'
[504] Ibid.,: '*NON, il n'y a pas, "d'effet Tchernobyl" en France*.'
[505] Ibid.,: '*Ces malades français sont les otages d'un lobby anti-nucléaire et juridico-medical*.'

with the increasing awareness of the situation in the most contaminated regions in Eastern Europe.

'*Caen-Group*'

The living conditions of people in the most affected regions in Eastern Europe also came to be of central interest to a group of sociologists from the University of Caen (Normandy). The term 'Caen-Group' is not a self-coined term but one I have chosen to use in reference to the group of people who were involved in the publication activities of Guillaume Grandazzi and Frédérick Lemarchand and looked at Chernobyl from a social-philosophical perspective. Grandazzi and Lemarchand are the editors of the anthology *Les silences de Tchernobyl*, published in 2004.[506] The second edition of the book and Grandazzi and Lemarchand's work and views were widely reflected in French media reporting on the occasion of the 20th anniversary of the accident. The central argument of Grandazzi and Lemarchand's interpretation of Chernobyl was that they did not consider Chernobyl to be an isolated solitary event that took place in 1986 but an ongoing event that, though it began in 1986, will continue to unfold in the future.[507] In accordance with Günther Anders and his considerations on the atomic age, Grandazzi and Lemarchand saw in Chernobyl the manifestation of an era that is characterized by the constant possibility and potential for total destruction. Furthermore, they believed that time was inverted in this era, wherein the past becomes the future. And therefore, a completely new form of commemoration, the commemoration of the future, was needed.[508] Because Chernobyl broke with all temporal and spatial reference points, the problem of creating an image of the unimaginable arose. Another central element with regard to the issue of lack of reference points is the missing *événement fondateur* ('inceptive event'). The daily life of the victims suddenly changed without evident reason: '*Still today, millions of inhabitants of the contaminated zones find themselves denied a reference point to the accident. […] The event is first and foremost daily life and the fact of being brutally thrown into a world marked by new rules, of new interdictions*.'[509] Thus, the primary objective of *Les silences de Tchernobyl* was to expose daily life in the contaminated areas, and how the suffering of the people was denied by official institutions and the nuclear lobby. Therefore, the various articles of this anthology discussed topics ranging from the

[506] Guillaume Grandazzi and Frédérick Lemarchand (eds.), *Les silences de Tchernobyl. L'avenir contaminé* (Paris: Éditions Autrement, 2004).

[507] For a detailed account on the 2004 edition of *Les silences de Tchernobyl* and for further information on the background of the editors, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 125-129.

[508] Guillaume Grandazzi and Frédérick Lemarchand, "Avant-propos." In *Les silences de Tchernobyl,* ed. by Grandazzi/Lemarchand, p. 7: '*Le problème de la mémoire est ici posé d'une manière radicale et inédite: Tchernobyl nous conduit à nous forger une mémoire du futur, une mémoire "à rebours"*.'

[509] Ibid., p. 10: '*Les millions d'habitants des zones contaminées se trouvent encore aujourd'hui privés de référence à l'accident. [...] L'événement, c'est d'abord la vie quotidienne et le fait d'être brutalement plongé dans un monde doté de nouvelles règles, de nouveaux interdits.*'

cover-up politics of the Soviet Union in 1986 to the current working conditions of doctors in the most affected areas, this last exemplified primarily by the case of Yuri Bandazhevsky. One of the main problems for the people in these areas was, from the point of view of Grandazzi and Lemarchand, that they were confronted with something heretofore completely unknown; there was a total '*absence of reference points, of experiences, of cultural references that could be drawn on in this entirely new situation*.'[510] This setting made it difficult for the people to improve their own situation and to even express their feelings. What made the situation even worse for these people was the concept of 'radiophobia', which was used in official reports to describe their situation, transforming the victims into culprits and denying them their fears, suspicions and consequently caution with regard to their environment – i.e. their only weapons against the further uptake of more radionuclides – which were necessary for their survival in the most contaminated areas.

Of prime importance to *Les silences de Tchernobyl* was a book to which the editors dedicated an entire part of the four parts of the volume: *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* by Svetlana Alexievich. Alexievich's book had been translated into French in 1998 and met with tremendous success: From numerous reprints, to the adaptation as scene play, to countless quotations in almost every text that has been written on the topic of Chernobyl in France, *La supplication* was the incarnation of the counter narrative to the official narrative provided by the French public authorities and official international expert groups. The impact of this narrative will be discussed in chapter 3.1.3.

Britain

The official Chernobyl narratives provided by national and international nuclear authorities also excited criticism in Britain. Compared to the variety of publications and the sheer number of critical voices in France, however, the critical Chernobyl discourse in Britain was almost invisible between 1989 and 2005. This is even more so with regard to the aspect of self-affectedness. In general, anti-nuclear power positions – which had never been as strong in Britain as the anti-nuclear weapons position – steadily lost momentum. In order to understand the underlying reasons for this invisibility, this phenomenon must be considered in direct relation to changes made to the nuclear policies: In the 1990s, the British government decided to refrain from building any new nuclear power plants. Indeed, the new Sizewell B reactor was completed and connected to the grid only in 1995. But rather than making this nuclear reactor the pioneer of a whole fleet of PWRs on British

[510] Guillaume Grandazzi, "L'atome en héritage." In *Les silences de Tchernobyl,* ed. by Grandazzi/Lemarchand, p. 129: '*absence de repères, d'expériences, de références culturelles mobilisables face à cette situation inédite*.'

soil – as was the original intention – he government decided in May 1995 that the civil nuclear sector would no longer receive public (financial) support. Consequently, CEGB renounced its plans to build more new nuclear power plants. This energy policy was the extreme opposite of the official policy in France. On the other side of the Channel, the government had decided to replace old PWRs with a fleet of new 3rd generation PWRs, the so called *European Pressurised Water Reactor* (EPR), which a joint French-German technical consortium had begun to develop in the early 1990s. Concurrently, France actuated a profound reorganization of its nuclear sector. The government overhauled the radiation protection authorities and founded new agencies, among which the *Autorité de sûreté nucléaire* (ASN) in 2006. But, more importantly for the nuclear industry, *Areva*[511] was instituted with the intention of making this company the world leader in reactor construction, uranium extraction, and fuel production. This policy to give strong political and financial support to the French nuclear power industry incited fierce criticism of anti-nuclear activists and lead to an intensification of their protests and campaigning efforts. The *Réseau sortir du nucléaire* ('Network phase-out of nuclear power'), which was created in 1997, became a key player in the coordination of these protest and campaigning activities. So while in France anti-nuclear power protests made a strong comeback in the late 1990s, in Britain there was barely any such activity. Since the phase-out of existing plants had never been an objective of the majority of anti-nuclear power campaigners, their case was basically won with the government's decision of 1995, of course with the notorious exception of Sellafield, which continued its discharges into the Irish Sea. If anti-nuclear power plant activism was almost non-existent in the 1990s, activism associated with other environmental issues was thriving in Britain at the time. In the early 1990s, Greenpeace and the FoE had experienced a rapid increase in membership. In particular, Thatcher's plans for new road construction and large scale projects like the Eurostar had incited intense protest, which was strongest in South-East England.[512]

Friends of the Earth

In the late 1980s, the FoE was still actively involved in the debate over the impact of the Chernobyl

[511] Areva was instituted in 2001 and was the result of the merger and reorganization of the companies Framatome ANP, Cogema, and CEA-Industrie. This reorganization of the French nuclear sector was the result of a government initiative to render the nuclear industry more competitive. Areva is a holding company that unifies the companies Areva NP, Areva NC, Areva T&D and Areva TA. Areva NP (NP = Nuclear Power) is today the world leader in the field of reactor design development and construction and until 2006 operated under the name Framatome ANP (ANP = Advanced Nuclear Power). Areva NC (NC = Nuclear Cycle) is a world leader in the field of fuel cycling (exploitation, enrichment, reprocessing) and until 2006 operated under the name Cogema. Over the last few years, Areva NC has been highly criticized for the working conditions in its uranium mines in Niger.

[512] For an account of British environmental activism in the 1990s, see: Rootes, *Britain*.

fallout, in particular with regard to the fallout in Britain. In a 1989 report titled *Fallout over Chernobyl: A Review of the Official Radiation Monitoring Programme in the UK*, FoE campaigners Patrick Green and P. Daly criticized how the sheep farm restrictions had been and were being managed and claimed that in some areas the restrictions had been lifted too early whilst in some contaminated areas they had never even been introduced.[513] The report did not pass unnoticed, as may be attested by its mention in an article in *The Guardian*: '*A group of scientists yesterday added their voices to those of Friends of the Earth in suggesting that the ban on the sale and slaughter of sheep introduced in parts of Britain after Chernobyl may have been wrongly applied. The scientists say results obtained in north-west Wales show that farmers in some affected areas may have wrongly escaped the ban and others may have been unnecessarily restricted*.'[514]

In 1991, the FoE released another publication on Chernobyl, which, this time, addressed the situation in the most affected regions in Eastern Europe. This publication was a six-page brief written by FoE radiation campaigner Patrick Green after his visit to Belarus. Green exclusively discussed the health effects in Belarus and was very cautious in the way in which he crafted his statements. This is evident in his comment on the observed increase in illnesses in the most affected regions: '*However, these statistics only provide a general indicator of a medical trend, they do not prove whether or not the exposure to radioactivity was responsible*.'[515] In spite of this prudence, Green clearly expressed his criticism of the way in which the IAEA evaluated the sanitary situation: '*It is extremely worrying that the international agency charged with investigating the health effects of the accident seems to have made up its mind that the only health effect is radiophobia*.'[516] He indicated that there was an obvious need for epidemiological surveys, but whether these studies should be conducted by the IAEA and whether or not the right people would be included was, from Green's point of view, to be seen.

After the early 1990s, I no longer found any further material on Chernobyl published by either the FoE or other British environmental NGOs.

Sheep Farmers

With regard to British sheep farmers, no further publications seem to have been released on

[513] Unfortunately, I was unable to consult this item. It is missing in the collection of the British Library. My inquiry request put in at the London head office of the FoE to consult the report in their archive or to put me in touch with one of the authors was answered with a negative response. The only information I received was that Patrick Green left the FoE in 1996.

[514] The Guardian, "Chernobyl bans criticised," 19 September 1989, p. 2. Another reference to the FoE report is found in: The Guardian, "Disaster that fell with the rain on a bleak hill," 27 April 1990, p. 25.

[515] Friends of the Earth, *The Chernobyl legacy* (London: Friends of the Earth, 1991), p. 5.

[516] Ibid.

Chernobyl after the 1988 memorandum by the Farmer's Union of Wales. However, given that British newspapers on some occasions reported on the continued sheep farm restrictions and at times wrote longer articles around the individual lives of affected farmers, some public statements are available for this period. Undoubtedly, to use these articles as sources is to look at the sheep farmers' statements through the lens of an intermediary, the journalists; but with no first hand sources available, these articles nevertheless provide some information on the group of people who was most affected by the Chernobyl fallout in Britain.

In contrast to the point of view of the FoE that some restrictions had been lifted too early or had not even been imposed, some sheep farmers considered the restrictions in and of themselves to be a problem, and believed they were the victims of a government food safety PR campaign. This perception was clearly expressed in an article printed in *The Guardian* in June 1990: '*Roger Ward, regional director of the National Farmers Union in Cumbria, says his view all along was that the restrictions weren't necessary, but the NFU went along with them to demonstrate to the consumer that the product was definitely save.*'[517] In addition to the mistrust in and frustration with the public authorities, the restrictions had proved to be a financial challenge for many farmers: though they received compensation payments, some farmers were extremely worried that they would be unable to find a buyer in the event they decided to sell their farm in the future. Others were concerned over the possible health effects the fallout would have on their families and their animals. In this regard Trebor Roberts, a sheep farmer from North Wales, told a journalist in April 1990: '*Personally I am scared for the young people and the children. I am too old but what about seven and eight-year-olds when it happened? Some people locally were taken for testing and were found to have very high radiation levels indeed. I have worked this farm for 21 years and bought it just before Chernobyl. During all that time I had maybe six deformed lambs. Last year I had more than 20. The mothers of these lambs were born after Chernobyl. Other farmers have had similar experiences. […] Nobody seems to care.*'[518] Aside from Benbecula, Trebor Roberts' statement is one of the very few instances in which the perception of a visible sanitary impact of the Chernobyl fallout in Britain is openly addressed. However, the author of this article seems to have believed Roberts' statement to be quite extreme. In fact, the article balances Roberts' worries about possible health effects in children in this region with a statement from physicist Dr David Sanderson: '*Since the meat contains only tiny amounts of C137 and is distributed widely by the food industry, he says, only small amounts are actually eaten by any one individual. And the absorption of a little more of an element that is already naturally there is not a major consideration.*'[519]

[517] Stephen Cook, "Render unto caesium 134," in *The Guardian*, 1 June 1990, p. 23.
[518] The Guardian, "Disaster that fell with the rain on a bleak hill," 27 April 1990, p. 25.
[519] Ibid.

It seems that not too many farmers in the area were willing to give interviews to journalists, since nine years later it was once again Trebor Roberts who appeared in an article published in *The Guardian*. In this 1999 interview, Roberts strongly underpinned his argument from 1990 that '*Nobody seems to care*' when he spoke about the widespread ignorance regarding the contamination in Snowdonia: '*I could even go into Dolgellau [the town closest to his farm] and people on the street would wonder what restrictions you were talking about. They have not a clue, even seven miles away*.'[520]

While some farmers might have been happy for this veil of ignorance under which the enduring sheep farm restrictions were cloaked – after all, the BSE crisis was already threatening to discredit British beef, and people didn't have to be reminded of the problem of radioactive sheep – others did not think of these restrictions as just one food scandal among others but drew wider conclusions connected to their political stance. In this regard, a farmer from Wales stated in an interview in 1994: '*My sister was in CND and I honestly didn't understand what she was going on about. Then this happens. A cloud of radioactive dust is created 2,000 miles away and travels 5,000 miles up over Scandinavia. It keeps going until it hits a mountain in Wales. And eight years later, it's still here*.'[521]

2.2.4 Individual voices

Britain

As aforementioned, very few publications on Chernobyl appeared in Britain between 1989 and 2005, none of which were not natural science studies on the transport mechanisms in the air, water, and soil. The objective of this mere handful of books was to present a concise history and analysis of the accident and its impact, the most known among them were: *Chernobyl, the long shadow* by Chris C. Park,[522] and *Fire in the Rain. The Democratic consequences of Chernobyl* by Peter Gould.[523] These books appeared in 1989 and 1990 respectively and were both written by academic geographers. Because the late 1980s have been extensively covered in this chapter, these accounts on Chernobyl will not be discussed in detail. Furthermore, both books were one-time contributions to the debate: the authors neither wrote again about Chernobyl nor on other nuclear issues. Of the

[520] James Meikle, "Chernobyl legacy lingers down on the farm," in *The Guardian*, 1 May 1999, p. 10.
[521] David Ward, "Hill farmers living under cloud as effects of Chernobyl linger," in *The Guardian*, 25 April 1994, p. 7.
[522] Chris C. Park, *Chernobyl. The long shadow* (London: Routledge, 1989). At the time when he was writing the book, Chris C. Park was a Geography Professor at the University of Lancaster.
[523] Peter Gould, *Fire in the Rain. The Democratic consequences of Chernobyl* (Cambridge: Polity Press, 1990). In 1990, Peter Gould was a Geography Professor at Penn State University.

various individual British voices that came forward with an interpretation of the event in the late 1980s, only one author stuck with this topic: Richard F. Mould.[524]

Richard F. Mould

Similarly to the approach taken by the Watt Committee, Richard F. Mould also reviewed his Chernobyl account published in 1988 and released, in 2000, what he referred to as '*the definitive history of the Chernobyl catastrophe.*'[525] The task he set for himself in this book was nothing less than to provide '*a balanced account of the accident and its aftermath, excluding media hype and biased accounts of self-interest groups, and debunking some of the myths which have surrounded Chernobyl.*'[526] In the foreword, Mould stated that he believed to have been successful in fulfilling this task. To convince the reader of his qualification to do so, however, he took an entire page to present his '*about the author*' information, listing his books, his work for the WHO and IAEA and his honorary memberships as well as the number of his grandchildren.[527] Unlike his 1988 publication, pictures in this new edition were used to illustrate the text, and not the other way round. Furthermore, the language of this book lacked much of the elitist haughtiness that had marked the style of his previous book. In general, the text was neither dogmatic nor agitated; it cited a multitude of reports and many other sources. For instance, to ensure a balanced representation of the facts, a mixture of eyewitness accounts, scientific reports and newspaper articles were used to recount the events comprising the accident. When Mould expressed his position on nuclear power plants, he now adopted a more 'matter-of-fact' style stressing that the plants were there and therefore we had to deal with them. He no longer openly praised the '*only viable alternative for the foreseeable future'* as he had in 1988.[528] To prove his neutrality, Mould also did not refrain from criticizing other 'authorities' of the international Chernobyl discourse, like Robert Gale.[529] Mould's evaluation of the health effects of the Chernobyl fallout, however, wholeheartedly concurred with the interpretation contained within the *International Chernobyl Project*. In fact chapter 15 was

[524] Rob Edwards very well may be the exception that proves the rule: Edwards, too, continued to write about Chernobyl, however only in some newspaper articles. The only book he published after *Britain's nuclear nightmare* dealt with the health effects of Sellafield: Rob Edwards and Susan D'Arcy, *Still fighting for Gemma* (Bloomsbury, 1995). The book is available online on Edward's website: http://www.robedwards.com/2007/03/still_fighting_.html (last accessed: 15 November 2013).

[525] Richard Francis Mould, *Chernobyl record: the definitive history of the Chernobyl catastrophe* (Bristol: Institute of Physics Publishing, 2000).

[526] Ibid., p. xiv.

[527] Ibid., p. xvii.

[528] This change in use of language corresponds to what Sezin Topçu has described with regard to France following the Chernobyl accident as a shift in the nuclear industry's discourse from the sacralization of nuclear power to emphasizing the '*fait accompli*' of the matter, see: Topçu, *L'agir contestataire à l'épreuve de l'atome*, pp. 305.

[529] Mould, *Chernobyl record*, p. 92.

entirely dedicated to '*Psychological Illness*'. The introduction to this chapter is quoted in detail for two reasons. First, it clearly elaborates the conceptual framework of 'radiophobia'. Second, this account demonstrates what a narration of Chernobyl within the frame of 'radiophobia' can mean for the comparison of the accident to other 'technological disasters': *'Technological disasters in the period 1984–86 have included not only that at Chernobyl but also the explosion at the chemical plant in Bophal, India and the crash of the American space shuttle Challenger. In the wake of these, people have grown more sceptical of new technologies and more fearful of familiar technologies around them, particularly when they perceive that there is an impact on health. […] There is, though, no doubt that Chernobyl is the greatest psychological disaster of the 20th century, having had a worldwide impact. In 1986, just after the accident, the major cause of concern was the future expected increase in the incidence of thyroid cancer and leukaemia, particularly in children and adolescents. However, a decade later it became apparent that the magnitude of psychological and social problems, of which radiation phobia is only one aspect, far outweighed that of radio-induced cancers, and that the social and associated economic problems of psychological illness in Ukraine, Belarus and Russia, due to the Chernobyl accident, would be enormous, both now and in the 21st century*.'[530]

In order to substantiate his interpretation, Mould referred to studies undertaken within the framework of the *International Chernobyl Project*. Another important source to corroborate his arguments were the proceedings of the WHO conference in 1995, which he cited extensively, for instance: '*The national health registries of Belarus, the Ukraine and Russia recorded significant increase in many diseases that are not related to radiation. These have included endocrine diseases, mental disorders and diseases of the nervous system, sensory organs, and digestive and gastrointestinal systems. Congenital abnormalities have also been observed. While present evidence does not suggest that these diseases are radiation induced, it is possible that such problems resulted from the considerable stress caused by the accident.*'[531]

The entire debate on the health impact of the Chernobyl fallout can, to put it quite bluntly, be reduced to this statement, or perhaps more precisely to whether one believes the veracity of this statement or not. If the choice is made to honour the statement, it is necessary to rely on the 'radiophobia' meta-narrative to explain the increase in observed illnesses. In the instance in which this explanation is refuted, the following question must necessarily be asked: Why would the WHO publish such an account rather than promote further research on the health effects of low-level radiation? In an attempt to answer this question, one theory in particular has garnered progressively

[530] Ibid., p. 225.
[531] Ibid., p. 231.

more support in the last few years. It refers to an agreement between the IAEA and the WHO, dating from 1959, in which these two international agencies worked out the terms of their relationship, namely: *'Whenever either organization proposes to initiate a program or activity on a subject in which the other organization has or may have a substantial interest, the first party shall consult the other with a view to adjusting the matter by mutual agreement*.' This agreement, which has played a prominent role in the French Chernobyl debate, will be examined further in the chapter on the transnational Chernobyl debate. Therein, more information will be given on the *Free WHO* movement, which calls for an annihilation of the IAEA-WHO Agreement. In this paragraph, the existence of the debate over the independence of the WHO is used to clarify in which way accounts such as Mould's offered fertile terrain for critical attacks on the part of anti-nuclear activists.

The degree to which Mould himself believed in the non-existence of a relation between the increase in various illnesses and the radiation levels observed in the most affected areas became ever more obvious in the subsequent chapter on '*Other Non-Malignant Diseases and Conditions*'. Here, Mould presented a slight reformulation of the WHO account cited above: '*Other diseases and conditions have, of course, been reported, such as those of the cardiovascular system and of the immune system, but no correlations have been established with radiation exposure from the Chernobyl accident. There are so many confounding factors including stress due to the accident, socioeconomic conditions and an inadequate diet that it is extremely unlikely even with long-term detailed follow-up that it will be possible to prove any significant correlations.*'[532] Likewise, Mould was extremely sceptical that links between different sorts of cancers and radiation could be ascertained. According to him, only an increase in thyroid cancer could be attributed to the Chernobyl fallout. '*In terms of other cancers in Chernobyl populations, no significant increase in their incidence has been observed.*'[533] Of course, probabilistic cancer deaths as a result of Chernobyl had been calculated, but because of the high background cancer mortality, this increase was not observable. Mould phrased this statement in the following way, using rather technical language which is representative of the linguistic approach of his book: '*For the cohort of 200,000 liquidators the increase in solid cancers is some 2,000 compared to the background of 41,500. This excess would be difficult to detect epidemiologically. This is also true for the cohort of 6,800,000 residents in contaminated territories for whom the predicted excess solid cancers is some 4,600 against a background of 800,000.*'[534]

The Watt Committee and Richard Mould examples show clearly that the 'radiophobia' narrative was willingly taken up by those actors who, from the beginning, had regarded the health

[532] Ibid., p. 235.
[533] Ibid., p. 260.
[534] Ibid., p. 286.

impact of the fallout from the Chernobyl accident to be rather limited. The concept of 'radiophobia' offered the possibility for these actors to uphold this evaluation and, at the same time, highlight the risks that, from this point of view, resulted from cultivating an exaggerated fear of radiation. Consequently, the question of British self-affectedness did not play any role in these publications. And as opposed to France, where the topic of self-affectedness was all-present, British publications did not even have to refer to this issue.

Christopher Busby

While the critical individual voices that had published on Chernobyl in the direct aftermath of the accident did not continue to play an active role in the public debate, a new actor, Christopher Busby, rose to partly fill this gap in the 1990s. Busby's work has been dedicated to the search for visible health effects of the nuclear industry in Britain. From the mid-1990s onwards, he has basically been the only person to publicly speak and write on the health-related effects of Chernobyl in Britain. Busby, an active member of the Green Party, dedicated his life to finding proof of the health effects that exposure to low-level radiation health effects had caused in Wales. He believed that Wales, in particular, had been exposed to discharges from the various nuclear facilities in the country and nearby, and had received more radioactive fallout from nuclear weapons testing than any other British region.

Busby is a highly controversial figure, and it is almost impossible to find a neutral statement about his work, and even more so about his person. People either consider him to be a hero fighting the mighty nuclear lobby, or hate him and campaign against him, especially those who are associated with this lobby.[535] The term '*jerk*' is one of the more bland labels British and other pro-nuclear-activists often use when referring to him. In order to refrain from further disseminating such unpleasant linguistic choices, I will not include any further direct quotes here. But it is remarkable that when writing about Busby, even normally eloquent individuals – like George Monbiot in his Blog for *The Guardian* in November 2011 – have got carried away using language that would be expected more of lurid tabloid articles.[536] A most illuminating example of the controversies about his person is the talk page behind the *Wikipedia* article on Busby: pages and pages of quarrels between the *Wikipedia* editors – there have been two editors since one editor withdrew from the

[535] The worst example of this Anti-Busby-Campaign is the website 'Chris Busby Exposed' which aims to strategically damage his reputation with personal defamation tactics, see: http://junksciencewatch.wordpress.com/ (last accessed: 15 June 2013).

[536] George Monbiot, "Christopher Busby's wild claims hurt green movement and Green party," in *The Guardian Online*, 22 November 2011, http://www.guardian.co.uk/environment/georgemonbiot/2011/nov/22/christopher-busby-nuclear-green-party (last accessed: 15 June 2013).

work when a contributor to the article brought forward legal threats against him – and resolutely pro- and anti-nuclear activists.[537]

Busby's first public contribution to the British Chernobyl debate came in the form of his 1995 book *The wings of death: nuclear pollution and human health*,[538] which he published through *Green Audit*, an '*environmental consultancy firm*' that he founded in 1992. The aim of this book was to make public his '*Second-Event Theory*', a theory that claimed nothing less than to have discovered the biological mechanism linking radiation from nuclear power plants and leukaemia in children. The central argument of this theory is that '*internal radiation can have a quantitatively greater effect than external radiation*.'[539] The details of this theory are not what is pertinent to this discussion here, but rather the way in which Busby integrated the Chernobyl fallout in Britain into his argument.

Busby's account of the accident itself was quite short (only one page) and was inserted, along with Windscale and Kyshtym, under the headline '*Major accidents in the Nuclear Industry*'. In these few paragraphs, Busby mainly referred to the evaluation carried out by the famous US anti-nuclear activist John Gofman, who had calculated that 970,500 cancers would come of the Chernobyl accident. However, Busby considered that this number '*may be still an underestimate*' because he believed that the effects of internal radiation had not been correctly taken into consideration: '*The Hiroshima survivors data used by him [Gofman] is, itself, flawed in that it did not distinguish internal contamination dose from external dose and made the first of a series of errors which have been repeated ever since in studies which have attempted to evaluate the effects of ionizing radiation on health*.'[540] Busby also strongly criticized the government's emergency management of 1986: '*The Chernobyl disaster provided a contemporary insight into the workings of government in Britain. The watchword is always: "deny any risk." So when the radioactive rain fell in Wales and in Cumbria the population was told "No need for alarm – continue as usual."*'[541]

Thus, the accident as such was not the focal point of Busby's publication. He used Chernobyl as an example to illustrate that the existing models used by UNSCEAR and other official institutions were erroneous. '*There are already 450 cancers in the first 10 years for the under-14 age-group alone in the areas into which the evacuees were moved. Only 100 excess thyroid cancers were predicted for all age-groups combined in this population for the next fifty years. […] These predictions were made on the basis of the existing risk factors, so their inaccuracy, already*

[537] Wikipedia, "Talk: Christopher Busby - Wikipedia, the free encyclopedia,": http://en.wikipedia.org/wiki/Talk:Christopher_Busby#cite_note-0 (last accessed: 15 June 2013).
[538] Chris Busby, *The wings of death: nuclear pollution and human health* (Aberystwyth: Green Audit Books, 1995).
[539] Ibid., p. 188.
[540] Ibid., p. 91.
[541] Ibid., p. 92.

apparent and no doubt to become more obvious over the coming years, indicated that the risk-factor calculations for thyroid cancer, like those for leukaemia, are unreliable.'[542] According to Busby, Chernobyl was just one source of radionuclides amongst many others. But he also asserted that the effects of these radionuclides were far more severe than what official publications had proclaimed, and even in places as far away as Wales. Using the data of a study published in 1991 – in which, incidentally, the author declared that Chernobyl had had no effects on infant mortality in the regions with the highest fallout in Britain – Busby came to a different conclusion: '*There was a peak in neonatal deaths at the time of the fallout followed by a statistically significant depression in infant mortality over the nine months following the peak. This depression was followed by a statistically significant excess in neonatal mortality, perinatal mortality, and still-births in the month-long period beginning on 27 February 1987*.'[543] From Busby's point of view, there was an obvious explanation for this depression in infant mortality in the 9-month gap: foetal death in utero. But though they may have survived exposure in utero and during the first few months after their birth did not mean that these children were well off. Many showed low birth weights and '*those babies that survived all of these effects may still become sick later, of cancer in childhood or perhaps some mutation-related illness in childhood or later life*.'[544] Yet, Busby not only saw effects in foetus and children and an increase in thyroid cancer and leukaemia, but he also noted '*an immediate cancer increase in 1987 across all types of cancer*.'[545]

Busby continued his investigations into the health effects from exposure to low-level radiation in Wales and in Britain in general. As aforementioned, Chernobyl was but one among other sources of low-level radiation; he also pointed to Sellafield, various British nuclear power plants, and weapons testing fallout as sources of this radiation. The most attention was probably paid to his publications on childhood leukaemia in children living in the vicinity of nuclear installations – a highly contested issue that has been investigated in other countries as well. In his studies, Busby treated the health effects of Chernobyl fallout in Britain primarily as a type of reference point to reveal the entity of the health effects of other nuclear ventures. In this regard, in 1999, the *Low Level Radiation Campaign* – which Busby had initiated – published the brochure *Do we really want nine Chernobyl accidents every year for the next ten years*, which argued against the implementation of an Euroatom-directive on nuclear waste into national law.[546] The brochure

[542] Ibid., p. 137.
[543] Ibid., pp. 297.
[544] Ibid., p. 298.
[545] Ibid., p. 301.
[546] Low Level Radiation Campaign, *Do we really want nine Chernobyl accidents every year for the next ten years? : European Council Directive 96/29/Euratom the so-called "basic standards directive" on radiation protection* (Low Level Radiation Campaign, 1999).

presented Chernobyl as one problem among others, emphasizing that '*we all have man-made radionuclides inside us from Sellafield, weapon tests, Chernobyl etc. etc*.'[547] As with the general British anti-nuclear discourse, Sellafield figured first in Busby's list. Thus, unlike France, where revealing the 'truth about Chernobyl' manifested in the endeavour to identify French Chernobyl victims, revealing the 'truth about Chernobyl' for Busby meant to expose the health impact of the British and global nuclear enterprise in general.

In 2000, together with his partner Molly Scott Cato, Busby published a paper specifically on Chernobyl: '*Increases in Leukaemia in Infants in Wales and Scotland Following Chernobyl: Evidence for Errors in Statutory Risk Estimates*.'[548] In this paper, Busby and Scott Cato claimed that through their calculations they had discovered '*an error in the presently accepted risk factors for radiation induced leukaemia of about 100-fold or more*.'[549] After comparing the numbers of predicted cases by the NRPB to observed cases, they reached the conclusion that '*the effects of the Chernobyl fallout in Wales and Scotland were significant*.'[550]

The NRPB took notice of Busby's studies, and in the early 2000s published a response in which it dismissed all of his findings.[551] Annex 2 of this document was dedicated in its entirety to contest Busby and Scott Cato's results in their study on Chernobyl health effects in Britain. The NRBP concluded that '*the current evidence for increased leukaemia risks associated with exposures from the Chernobyl accident is not convincing overall, and does not support the conclusions drawn by Busby and Scott Cato about radiation risk estimates*.'[552] This response only resulted in another counter argument by Chris Busby to the NRPB in which he in turn dismissed the NRPB's arguments against the validity of his findings.[553]

The objective of Busby's work was clear: to reveal the pro-nuclear bias of natural science research, not the research of individual scientists, but of nuclear science in general. He explicitly communicated this aim in his publication: '*When I began my investigations into the health effects of low level radiation following the Chernobyl accident I was guided by a vague suspicion that some of the science supporting nuclear power was unsafe. But during the course of my research I have uncovered so much evidence of cover-ups, deceit, secrecy, and an absence of genuine scientific*

[547] Ibid., p. 7.
[548] Christopher Busby and Molly Scott Cato, "Increases in Leukemia in Infants in Wales and Scotland Following Chernobyl: Evidence for Errors in Statutory Risk Estimates," in *Energy and Environment* 11, 2 (2000), p. 127-139. The paper is available online: http://www.llrc.org/wobblyscience/subtopic/infleuk.htm (last accessed: 15 November 2013).
[549] Ibid., abstract.
[550] Ibid., discussion.
[551] NRPB, *Response to Wind Blown Particles and Cancer Mortality*, http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947375682 (last accessed: 15 November 2013).
[552] Ibid., p. 13.
[553] See: http://www.llrc.org/wobblyscience/subtopic/christopherrobinissayinghisprayers.htm (last accessed: 15 November 2013).

research that it has become obvious that what most nuclear scientists are about is supporting a paradigm.'[554] When such statements are taken into consideration, it becomes obvious why Busby has become such a controversial figure and why his work and he himself have been ferociously criticized by other scientists. This criticism and its intensity, however, only seems to have proved to Busby not only that he was right, but that anybody who does not accept his theories must be involved in the concerted action of the nuclear industry to cover up the truth regarding the health effects of exposure to low-level radiation.

France

In France, many more individuals have been involved in the Chernobyl debate than in Britain. And quite a number of people from both the pro- and anti-nuclear side have published accounts on the accident in which they incorporate their personal stance on nuclear policies into their analysis of the event and its impact. On the pro-nuclear side, the book by Georges Charpak,[555] a prominent French physicist who won the Nobel Prize, is a particularly interesting contribution to the French Chernobyl debate.[556] His work, in which he strongly argued in favour of stronger safety principles and nuclear fusion technology in order to make nuclear energy the main source of electricity in the future, was particularly interesting because his Nobel Prize and his active role as scientist very much in the public eye lent him an extraordinary amount of credibility in the scientific community and in the public at large. However, to address each voice in detail would render this chapter excessively lengthy. Therefore, I will only describe in detail one of the most prominent regarding the debate on French self-affectedness, namely an anti-nuclear proponent that may in some ways be likened to Busby.

Jean-Michel Jacquemin

Jean-Michel Jacquemin as aforementioned may be considered in many ways the French equivalent to Chris Busby. Most assuredly, their publications are not comparable at the scientific level. But since the mid-1990s, both men have dedicated their lives to revealing the true impact the Chernobyl fallout had in their respective countries. While the physical chemist Busby has concentrated on conducting natural science studies, former accountant Jacquemin has focused his activity on

[554] Busby, *The wings of death*, p. 302.
[555] Georges Charpak, Richard L. Garwin, Venance Journé, *De Tchernobyl en tchernobyls* (Paris: Odile Jacob, 2005).
[556] For an analysis of this book, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 140-144.

bringing justice to the French victims.[557]

Jacquemin's public commitment – which decidedly contributed to the situation wherein many people in France have linked their thyroid illnesses to the Chernobyl fallout – must be regarded from a critical perspective. One problematic issue with Jacquemin's work was the methodology with which he derived his statements: he cited material without giving bibliographic references, and his '*cancer index survey*' consisted mainly of the random consultation of local databases. Another problematic issue lay in his belief that he was a martyr on a holy mission.[558] Jacquemin equated the situation in France to the situation of the most affected areas of Eastern Europe, stretching the comparison to such absurd extremes that even organizations like CRIIRAD distanced themselves from Jacquemin's statements.[559]

In 1998, Jacquemin published his first book on Chernobyl: *Ce fameux nuage... Tchernobyl, la France contaminée*.[560] The book discussed in detail the *affaire Tchernobyl* and the continual disinformation and lies of the officials and experts formed the leitmotif of the narrative. Jacquemin had set for himself the task to reveal the true extent of the contamination of France, contamination that he claimed, in some hot spots, had been even greater than in some areas of the restricted zone around the Chernobyl plant.[561] Jacquemin was by far not the first or the only one to have investigated the 'true impact of Chernobyl in France': CRIIRAD had already dedicated itself to this task for more than a decade. However, Jacquemin was the first individual to get involved and gain visibility in the Chernobyl debate without being associated to a pro- or anti-nuclear group. His account focused on the health effects of Chernobyl in France and claimed that the fallout was responsible for the increase in thyroid diseases. According to him, the health effects of the fallout were a taboo subject, which continued to be avoided even after French public authorities had admitted that the country indeed had been hit by radioactive fallout.[562] He asserted further that this issue remained unaddressed even after, despite the fact that doctors on Corsica and cancer registers clearly demonstrated dramatic increases in the incidence of thyroid diseases since Chernobyl.[563] Jaquemin's claims did not go unheard: a second edition of his book was released the following

---

[557] For a detailed analysis of Jacquemin's various books, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 104-110. The following account summarizes the content of this chapter.

[558] Jacquemin concluded all his books with the acknowledgement: '*Merci à DIEU et à mon Guide, Mélahel, pour cette nouvelle mission, pour Votre aide et Vos protections*.' ('My thanks to GOD and my Guide, Mélahel, for this mission, for Your aid and Your protection.')

[559] See for example: Castanier, *Contamination des sols français*, p. 49.

[560] Jean-Michel Jacquemin, *Ce fameux nuage...Tchernobyl, la France contaminée* (Paris: Éditions Sang de la terre, 1998).

[561] The comparison of the radioactivity in France and in the area around the Tchernobyl plant figured prominently in the abstract of the book's back cover.

[562] Ibid., p. 163.

[563] Ibid., pp. 164.

year.[564] In the extended annex to this edition, Jacquemin included a section on the AFMT, asserting in a self-congratulatory tone that the formation of this group was directly linked to the first edition of his book.[565]

In 2001, Jacquemin's next book came out: *Tchernobyl: Aujourd'hui les Français malades*.[566] The text began with a clear statement: '*Fifteen years after the Chernobyl catastrophe, more and more French people suffer illnesses that are imputed to the radioactive cloud. The facts, the numbers are there. But the denial by the all powerful nuclear lobby continues and persists*.'[567] For this reason he had continued to press on with his endeavour: someone needed to give a voice to the sick people of France, whose existence had been denied and forgotten. To do so, he chose to follow a pre-existing model: Alexievich's book *La Supplication*. For a total of more than 80 pages, he presented, in 3 to 4 page-long segments, the lives of individual 'French Chernobyl victims'. The title of this chapter in itself was a statement: '*Les témoignages des malades – La supplication des Français*.' But the adaptation of the title of this famous book in which Alexievich had presented the life stories of Chernobyl victims in Belarus and Ukraine was not the only element Jacquemin borrowed of the apocalyptic Chernobyl narrative of the most contaminated areas in Eastern Europe and projected onto France. He appropriated the entire criticism that had been launched at the international level by anti-nuclear activists against the official evaluation of the health situation in these areas and applied it to France: In France, the same mechanisms had been employed to cover up the real impact of the accident. In applying to France the debate on Chernobyl's health effects in the most affected areas of Eastern Europe, Jacquemin reached the conclusion that Chernobyl had not only caused an increase in thyroid diseases in France, but it had also led to an increase in various other cancers, such as lymph gland cancer, breast cancer, leukaemia, and lung cancer.[568]

Jacquemin's mission did not end here, but continued. Already in 2002, his next book followed: *Tchernobyl, conséquences en France. J'accuse...!*[569] This time, in his choice of titles, he did not limit himself to making a connection between the Chernobyl health effects in France and Eastern Europe, but he went on to connect the French Chernobyl debate to one of the largest political scandals that France had ever experienced, the *Dreyfus Affair*, and presented himself as one

[564] Jean-Michel Jacquemin, *Ce fameux nuage...Tchernobyl, la France contaminée* (Paris: Éditions Sang de la terre, 1999).
[565] Ibid., pp. 319.
[566] Jean-Michel Jacquemin-Raffestin, *Tchernobyl: Aujourd'hui les Français malades* (Monaco: Éditions du Rocher, 2001).
[567] Ibid., p. 17: '*Quinze ans après la catastrophe de Tchernobyl, de plus en plus de Français souffrent de pathologies imputables au nuage radioactif. […] Les faits, les chiffres sont là. Le déni opposé par le tout-puissant lobby nucléaire dure et perdure*.'
[568] Ibid., pp. 147.
[569] Jean-Michel Jacquemin-Raffestin, *Tchernobyl, conséquences en France. J'accuse...!* (Paris: Éditions Sang de la terre, 2002).

of Émile Zola'a successors. As in his earlier books, Jacquemin presented the denial of the existence of French Chernobyl victims to be the result of global nuclear policies and the '*sainte alliance*'[570] ('holy alliance') between the WHO and the IAEA.

Jacquemin's publications were of prime importance to the French Chernobyl debate. They not only fostered the juridical claims against the 1986 government and the radiation protection authorities, but they also successfully discursively embedded the debate about the health effects of Chernobyl in France within the wider international debate about the health effects the accident had had and continued to have in Eastern Europe. In his narrative, the self-affectedness of France became an apocalypse in and of itself.

2.2.5 Chernobyl solidarity movement groups

The term *Chernobyl solidarity movement* is self-coined and means the collectivity of non-governmental initiatives that provide humanitarian aid to the regions in Eastern Europe that have been most affected by the radioactive fallout. These groups, most frequently established on the initiative of a single person, are mainly known to a wider public through their organization of recreational holidays abroad for the 'children of Chernobyl' and for the collection of clothes, medicine and presents for these children. Furthermore, many of these initiatives collect money that is invested in the infrastructure of hospitals and orphanages. The activities of the solidarity movement have only recently become a topic of academic research and the existing literature on this subject is basically comprised of the works of Astrid Sahm,[571] on the impact of the solidarity movement activities in Belarus; Melanie Arndt,[572] on the motivations of West German solidarity movement groups; and Isolde Baumgärtner,[573] on various forms of aid and particular projects. In 2011, the first attempt to provide a more general account of the solidarity movement was undertaken by the German NGO *Internationales Bildungs- und Begegnungswerk Dortmund* (IBB). The publication *Tschernobyl und die europäische Solidaritätsbewegung*[574] was compiled by Isolde Baumgärtner; it included a history of the movement from a wider perspective and contained several

[570] Ibid., p. 186.
[571] Astrid Sahm, "Auf dem Weg in eine transnationale Gesellschaft? Belarus und die internationale Tschernobyl-Hilfe." In *Tschernobyl: Vermächtnis und Verpflichtung*, ed. by Sahm/Sapper/Weichsel, p. 105-116.
[572] Melanie Arndt, "Verunsicherung vor und nach der Katastrophe: Von der Anti-AKW-Bewegung zum Engagement für die 'Tschernobyl-Kinder'," in *Zeithistorische Forschungen* 7, 2 (2010): 240-258.
[573] See the various chapters by Isolde Baumgärtner in: Internationales Bildungs- und Begegnungswerk Dortmund (ed.), *Tschernobyl und die europäische Solidaritätsbewegung* (Norderstedt: Books on Demand, 2011)
[574] Ibid.

chapters on the activities of various solidarity movement groups in different European countries. Most of these country reports had been written by exponents. Linda Walker and Victor Mizzi, key actors in the British movement, contributed the UK chapter.[575] However, since none of the French exponents contributed to this compendium, I was asked to write the article on France.[576] For this purpose Isolde Baumgärtner and the IBB provided me with precious information on French solidarity groups. In addition to this book, the IBB organized in the same year the *International Partnership Conference* in Minsk, a conference that aimed to connect the different initiatives that have cropped up all over Europe and to provide them with a forum within which to exchange ideas and knowledge.[577] The conference took place in the *Internationale Bildungs- und Begegnungsstätte "Johannes Rau" Minsk*, a branch of the IBB in Belarus directed by Astrid Sahm at the time. I was invited to attend this conference and contributed to a workshop dedicated to the memory of Chernobyl.

France

Writing the article for *Tschernobyl und die europäische Solidaritätsbewegung* was the first time that I had a closer and more structural look at the activities of these groups in France. For my book *Tschernobyl und Frankreich*, I had only taken into account the group *Enfants de Tchernobyl Bélarus* (ETB). However, I had been more interested in the people behind this organization (Vassily Nesterenko, Galia Ackermann, Wladimir Tchertkoff, Solange Fernex, and Michel Fernex) than in the solidarity movement as such. The reason for which I did not initially dedicate more attention to the Chernobyl solidarity movement in France is that the groups do not play a prominent role in the French public debate on Chernobyl. They exist and do their work, but they do not shape the public image of Chernobyl. Furthermore, the Chernobyl solidarity movement groups in France are not big network-organizations with intense fundraising activities as they are in Britain. Moreover, organizations with a particular focus on Chernobyl are not the only ones to organize recreational stays for children from the most affected areas, there are also some local groups of the association *Familles Rurales* that do so.[578] Therefore, the French solidarity movement groups are less visible

[575] Linda Walker, "Die Arbeit von 'Chernobyl Children's Project (UK)' und ein Überblick über weitere Tschernobyl-Organisationen und Netzwerke in Großbritannien." In *Tschernobyl und die europäische Solidaritätsbewegung*, ed. by IBB, p. 108-116; Victor Mizzi, "Über die Arbeit von Chernobyl Children's Life Line." In *Tschernobyl und die europäische Solidaritätsbewegung*, ed. by IBB, p. 105-107.

[576] Karena Kalmbach, "Die Wolke, die an der Grenze haltmachte. Zur Wahrnehmung der Auswirkungen von Tschernobyl in Frankreich." In *Tschernobyl und die europäische Solidaritätsbewegung*, ed. by IBB, p. 74-88.

[577] The conference took place from 17 to 20 April on the occasion of the 25th anniversary of the accident. For the various activities the IBB organized on the occasion of this anniversary, see: http://www.ibb-d.de/tschernobyl1.html?L=2 (last accessed: 15 November 2013).

[578] I am thankful to Marie-Hélène Mandrillon for this information.

than their British counter parts and are known mostly in their local environment. The exception that proves the rule is ETB. However, this group is also an exception to the rule with regard to solidarity movement groups as such. The ETB does not organize recreation stays for children in France. Instead, it mainly collects money for *Belrad*, the '*Belarusian institute for radiation safety*' that was founded by Vassily Nesterenko, who also was a founding member of the ETB. Until his death in 2008, when his son Alexey took charge, Nesterenko was the director of Belrad. Vassily Nesterenko founded Belrad in 1990 to create an independent organization to measure radioactivity levels in the people and in foodstuffs within the areas in Belarus most affected by the fallout. Belrad has set up numerous local radiation measuring stations in which people can have their own radioactivity doses checked as well as the radioactivity levels of the locally grown food. Through these measuring activities, Belrad was able to collect a large amount of data that Nesterenko used for his own research into the health effects of radiation, particularly on children. Nesterenko became a key player in the transnational Chernobyl debate, and therefore his publications will be discussed in more detail in chapter 3.1. Belrad caught the attention of others outside Belarus mostly because of its use of pectin pills to reduce radioactivity in children, a 'cure' that was invented by Nesterenko. Belrad sells these pills under the trade-mark *Vitapect* in Belarus, but also internationally to host families of 'Chernobyl children' and, after Fukushima, to people in Japan. The ETB promotes the sale of these pectin pills. A recent flyer published by the ETB, in which the organization describes its activities, provides the following information on pectin pills: '*It is possible to help the sick children by financing apple pectin cures. Apple pectin is a natural adsorbent and the pills enable the children to eliminate more rapidly the caesium 137 from their organism. The radionuclide caesium 137 is present in their daily nutrition (the elimination reaches 50% or even 70% of the total amount of accumulated radioactivity within 3 weeks of cure repeated every trimester).*'[579] These pectin pills have become a highly political issue: while the agency and possible side effects of these pills are intensely disputed among physicians, the price of the pills have become another topic of debate, conforming, according to its opponents, that the pills are mainly an effective way for Belrad to make money. The advocates of the pectin pills, on the other hand, consider the criticism to be the result of a concerted action on the part of the pro-nuclear lobby, which continues in its attempts to block any research that might make life easier for radiation victims by denying their status as victims as well as the existence of health risks that stem from the systematic ingestion of low doses of radioactivity.

[579] '*Il est possible d'aider les enfants malades en finançant des cures de pectine de pomme, adsorbant naturel, qui leur permettent d'éliminer plus rapidement le Césium 137 de l'organisme, radionucléide présent dans leur nourriture quotidienne (élimination atteignant 50, voire 70% du taux de radioactivité accumulée, en trois semaines de cure répétées chaque trimestre).*' In: Entfants de Tchernobyl Belarus, *La plaquette réactualisée de l'association*, available online: http://enfants-tchernobyl-belarus.org/doku.php (last accessed: 15 November 2013).

Through its involvement in the pectin pills debate, the ETB has also become an important actor in the transnational debate on the Chernobyl health effects. At the same time, the ETB's activities have not been limited to Chernobyl: some of the ETB's founding members have played an important role in the general debate over the health effects of low-level radiation exposure. In this regard, the ETB itself was a founding member of *Independent WHO*, i.e. the initiative that campaigns against the IAEA-WHO Agreement. The ETB's founding father and long-time president, Michel Fernex, is a driving force behind *Independent WHO*, and is also responsible for initiating the permanent vigil at WHO headquarters in Geneva. Some years ago, Yves Lenoir, one of the most prominent French anti-nuclear activists and co-author of *Tchernobyl-sur-Seine* replaced Michel Fernex as president of the ETB and Wladimir Tchertkoff and Alexey Nesterenko are the vice-presidents for the organization. The prominence of these actors explains why the ETB is so much more visible than others Chernobyl solidarity groups in the French Chernobyl debate.

For the members of *Entfants de Tchernobyl Belarus*, their Chernobyl-related activities are directly linked to a clear anti-nuclear statement. This is, however, not true of all French Chernobyl solidarity movement groups. Other groups identify their work as humanitarian aid, and some even explicitly distance themselves from debates on nuclear politics. An example of this nuclear-unrelated self-positioning is the *Fédération Échanges France-Ukraine* (FEFU). The FEFU is an umbrella organization that unites 16 associations from all over France that are dedicated to cultural exchanges between France and Ukraine. Their humanitarian engagement consists primarily in aid for orphanages in Ukraine but also in the organization of recreational stays in France for children from these orphanages. The FEFU, as umbrella organization, bases its mission in the general socio-economic situation of Ukraine, wherein the 'Chernobyl children' are only one aspect among others; the focus is clearly placed on cultural exchanges. For some of its member associations, however, 'helping Chernobyl children' sits at the heart of their activities.[580] Two other organizations that work with 'Chernobyl children' are *Accueil des Enfants de Tchernobyl* and *Les Enfants de Tchernobyl* and are both based in Alsace. The two associations are dedicated to improving the living conditions of children in the most contaminated areas, especially in Ukraine. To do so, ever since their foundation in the early 1990s, they have organized donations of medicine and clothes as well as sponsorships of individual children and recreational stays in France. At the same time, by organizing events, they have tried in their hometowns to raise awareness of the situation of the 'Chernobyl children'. Another organization, also called *Les Enfants de Tchernobyl* but based in Paris, has concentrated its work on providing medical aid in Ukraine. The association's founders, Dr. Marie-Laurence Simonet

[580] For further information on the FEFU and its member associations, see the website: http://www.fefu.org/default.asp?voirpage=FEFU/Portrait.htm (last accessed: 15 November 2013).

and Dr. Alexandra Moutet, initiated collaborations between French and Ukrainian hospitals. In addition, they fund the *Centre Médical Français*, based in the Kiev paediatric hospital no 6, where more than 22,000 people have been treated since it opened in 1991.[581]

With the exception of the ETB, these solidarity movement groups have not prominently influenced the French Chernobyl debate; in fact they have been barely visible in the public debate. Only some of the associations have a website, and none of them have ever published a book or any other publication that has reached beyond its close circle of members. This setting, i.e. the role of Chernobyl solidarity movement groups in the national Chernobyl debate and their public visibility, is, however, completely different in Britain.

Britain

When the British actors of the nuclear sector and the anti-nuclear side lost interest in Chernobyl in the early 1990s, another group of actors, the solidarity movement, picked up this topic and filled the 'discursive gap' in the years to come.

During the aforementioned IBB conference of 2011, I had the opportunity to meet Linda Walker and speak with her about her work; we went on to discuss the activities of the British solidarity movement. What I found most astonishing about the account she gave me on her activities in this field in the last 20 years was the detachment of the Chernobyl topic from a more general debate on nuclear energy. This detachment does not regard Linda Walker's personal position – there is a close link between her commitment to the 'Chernobyl children' and her convictions on nuclear politics – but rather one that she is faced with in her fundraising activities. I got the impression that in Britain, a commitment to help the 'Chernobyl children', through the donation of money or by hosting them during recreation stays, does not automatically translate into an anti-nuclear stance. These activities may be equated with the Christian-oriented engagements to help underprivileged and handicapped children in 'third-world' countries. This first impression was reinforced by my many discussions with other people active in the British solidarity movement during the IBB Chernobyl conference that was held in 2012.

By researching publications written by people who were active in the British Chernobyl solidarity movement and the newspaper reporting on the 10th and 20th anniversaries of the accident in which their activities figured prominently,[582] I was able to consolidate my initial hypothesis on

[581] This paragraph is an adaptation from Kalmbach, *Die Wolke, die an der Grenze haltmachte*, p. 85-86. I am thankful to Isolde Baumgärtner for providing me with information on these associations.

[582] For the 10th anniversary, a search in the database *Newsbank* for the time span 15 to 30 April delivered numerous articles in local, regional, and national newspapers that dealt with 'Chernobyl children', while there were scarcely any articles on other Chernobyl-related topics, such as sheep farm restrictions for example. The topics of the

the existence of a way in which 'Chernobyl children' are perceived in Britain that is removed, separate, and distinct from the nuclear discourse. The following pages will illustrate my argument.

Chernobyl's Children Project

Worthy of note is the strong connection the British solidarity movement has with Irish activists, particularly Adi Roche. Roche, a peace and environmental activist and candidate for the 1997 Irish presidential elections, is the founder of *Chernobyl's Children Project* (CCP). Roche established CCP in 1991 in Cork. The organization rapidly expanded, opening branches in various countries. Thus, it became *Chernobyl's Children Project International* (CCPI). Linda Walker opened the first English branch in Manchester in 1995. Roche with her organization are special and unique for the fact that from the very beginning she was highly successful in communicating her work to a wider audience. When Roche travelled to Chernobyl for the second time, she brought along a whole film crew that transformed her experiences in the orphanages, deserted cities, and the restricted zone around the nuclear plant into a film documentary. The result – *Black wind, white land* – was produced by Ali Hewson. Hewson, like Adi Roche, is an Irish peace and environmental activist and is married to *U2*'s lead singer Bono. Hewson has been a strong supporter and lobbyist for CCPI and arranged for all the profits from the *U2* song *The sweetest thing* to be donated to CCPI.[583] Ali Hewson and Bono have also supported the work of Adi Roche on other occasions. *Black wind, white land* was not the only medial output of Adi Roche's work; when she travelled to the Chernobyl region for the third time, she was accompanied by two Icelandic film crews. The products of this visit resulted in strong Icelandic support of Roche's organization.[584] Furthermore, Roche took her experiences from her travels to the Chernobyl area and from her lobbying to bring 'Chernobyl children' to Ireland in the form of a book. *Children of Chernobyl. The human cost of the world's worst nuclear disaster*[585] was published in 1996 by a London-based publishing house. Although the book helped to spread news of her work, Adi Roche and her organization were already known in Britain. In fact, in 1994, Roche was contacted by Sarah Ferguson, the Duchess of York, who in the years to come supported the work of the CCP by providing funds through her foundation *Children in crisis* and by initiating an international publicity and fundraising campaign for the

previous group of articles included portraits of individual children, accounts on certain solidarity groups or members of a group, and stories of host families.

583 Wikipedia, "Ali Hewson," http://en.wikipedia.org/w/index.php?title=Ali_Hewson&oldid=480318803 (last accessed: 15 November 2013).

584 The work of Adi Roche and the CCPI was also at the centre of the film documentary *Chernobyl Heart*, which won the *Academy Award for Best Documentary* (short subject) in 2003.

585 Adi Roche, *Children of Chernobyl: the human cost of the world's worst nuclear disaster* (London: Fount, 1996).

'Children of Chernobyl.'[586]

Roche's publications and the UK branch of CCP alone did not transform Roche into a central reference point of the British Chernobyl debate. She also brought the 'Chernobyl child' Igor to the British Chernobyl debate, and in so doing, this last had become the face – or rather the body – of Chernobyl by the mid-1990s. To the readers of her 1996 book, Adi Roche introduced Igor as follows: '*Igor Pavolovetts was born on 30th March 1986 and became the first acknowledged "deformed" victim as a direct result of Chernobyl. His mother, in despair and shock at the sight of his broken body, abandoned him at birth to the state authorities. He was four years old when we first met him and had never seen anything beyond the four walls of the institution. Igor was special from the first moment I met him, not only because of his physical difficulties but also because his bright and loving personality overcame his limited circumstances. Igor, along with 60 other children, was being kept in this "holding place" which had little medicine, food or special facilities*.'[587]

Chernobyl's Children Lifeline

In order to prevent Igor's transfer to an adult mental asylum, Roche sought help from another Chernobyl children aid group: the English organization *Chernobyl's Children Lifeline* (CCLL), which had been founded by Victor Mizzi in 1991. The CCLL is the umbrella organization for 160 local groups, which are spread throughout the UK. Since the first recreational stay for 22 children from Belarus in 1992 was organized, the CCLL has brought more than 46,000 children to the UK. To properly manage the 3,500 incoming children every year, the CCLL runs an office in Minsk. In addition to the organization of these recreational stays, the CCLL collects money to support the families and for the improvement of the infrastructure of schools and hospitals in Belarus.[588]

Mizzi arranged for Igor to be brought to the UK, where he underwent a series of surgeries and was adopted by an English family. Tiny Igor with his deformed feet, short legs and his big smile almost became a celebrity in the UK. He starred in two TV productions: one told the story of his '*rescue to Britain*' and the other, a couple of years later, recounted his new life in England. His life story was depicted as the ultimate success story: he had escaped the dark life of a miserable Belarusian orphanage to now enjoy the splendour of British medical care and the love of a whole nation. This narrative found its incarnation in Jane Warren's book *Igor. The courage of Chernobyl's*

[586] For an account of this cooperation, see: ibid., pp. 107.
[587] Ibid., p. 19.
[588] These numbers are taken from: Mizzi, *Über die Arbeit von Chernobyl Children's Life Line*.

child,[589] which was published in 1997. In this book, Jane Warren, an exponent of the CCLL, described in detail Igor's life in England and embedded this story in a general account on Chernobyl. Two aspects of this Chernobyl account merit closer examination: The interpretation of the (post-)Soviet 'state of development' and the connection of this narrative to broader topics regarding nuclear aspects. Warren framed the events of 1986 as a derivation of the political system and therefore as a 'Soviet accident'. When describing the plant operators, she asserted that '*they were told repeatedly during their training, a nuclear power plant cannot explode*.'[590] Her description of the problems adhered to a clear east-west-divide: '*They [Soviet nuclear engineers] boasted that their nuclear reactors were of a superior design, despite the fact that British experts had condemned reactors like the one at Chernobyl as unsafe thirty years before the disaster*.'[591] The way in which Warren spoke of the work carried out by the emergency crews and 'liquidators' underpinned her narrative of a poor Soviet understanding of the highly sensible matter they were dealing with: '*Everything was badly buried by men who didn't understand the need for absolute precision*.'[592] Warren presented a similar 'lack of understanding' narrative with regard to the evacuated people. Despite the fact that the evacuees also included the inhabitants of Pripyat, people who were part of the scientific elite of the USSR, her comments on the evacuations were all encompassing: '*These were country people. […] They hadn't studied science. They didn't understand radiation*.'[593] These comments and remarks are a reflection of the implicit meta-narrative that coloured Warren's account: i.e. the image of a simple, uneducated people that was betrayed by their political leaders. In this regard, Chernobyl was framed more as a political accident than a nuclear accident. Although the impact of the nuclear fallout was considered to have been devastating and was conveyed using rather apocalyptic language – for example in relation to the orphanages: '*Gradually the dormitories were filling up with profoundly damaged babies and children. Many of them had defects caused by the radioactive food eaten by their mothers*.'[594] – the geographical impact of the accident was, according to Warren's descriptions, quite limited. A map indicating the '*approximate extent of radioactive contamination*' only showed parts of Belarus, Ukraine, and Russia.[595] Not one word about Chernobyl fallout in Britain was uttered in the book. Warren described Chernobyl's impact as a reality that was unfolding far from home. Britain, on the other hand, was presented as a place that did not face any of the problems little Igor had to deal with

[589] Jane Warren, *Igor: the courage of Chernobyl's child* (London: Boxtree, 1997).
[590] Ibid., p. 9.
[591] Ibid.
[592] Ibid., p. 13.
[593] Ibid., p. 18.
[594] Ibid., p. 32.
[595] Ibid., p. 14.

in his life in Belarus. Consequently, the chapter on his departure to Britain was titled '*The escape.*'[596]

The CCLL promoted this '*escape*' as a big event, which set the stage for Igor's career as a British 'humanitarian aid celebrity'. Even on his flight to Britain, Igor was already accompanied by the TV crews of stations *ITV* and *Sky*. Born with only one fully developed arm, two short legs, and deformed feet, the first thing that awaited Igor in his new home was the correction of his body. Warren spoke of this in her chapter '*The arm*'. The medial exploitation of Igor's arrival in the UK figured prominently in this chapter: '*By now a television crew was filming Igor's quest for his new bionic arm. Victor Mizzi had always felt that there was a story to be told about the courage of Igor. Through an acquaintance, he was introduced to the production company Zenith North, which was very keen to make a documentary about Igor's early life and rescue to the West*.'[597]

What followed in the subsequent chapters of the book were detailed descriptions of Igor's daily life in England, including some anecdotes of the 'odd behaviour' he had brought along from his previous home. '*Igor had settled into British life remarkably well, but there were still occasional signs of his early life in an institution. […] One day she [Barbara, Igor's host mother] hurriedly stuffed some of his underwear into his drawer and the next time she looked, it had all been neatly folded into piles and smoothed flat*.'[598] In his new life, Igor was often followed by TV cameras, a fact that Warren presented in a quite positive light: '*One morning in September 1994 it was time for Igor's first day at school. The television company, Zenith North, had arrived early to film this momentous day in his life*.'[599] Igor had become a celebrity: he was the face and body that represented the destiny of the 'Chernobyl children'. His life was narrated as a story with a happy ending. Photographs of Igor's perfectly formed smiling face that were included in the book underpinned this narrative. The visual representation of his smiling face stood for the British Igor of the present, while his severely deformed body represented Igor's Soviet past. Igor's physiognomy perfectly fit the needs of the media: His deformed body was a shocking image, but not too shocking to scare away spectators as it was balanced by his well-formed, normally proportioned and cute face. Igor's body offered the British media a way to broach the issue of the health effects Chernobyl had caused without having to directly present the situation in the most affected regions in Eastern Europe to their audience. At the same time, Igor's life could be told as a British success story without need to broach the topics of nuclear policies or radioactive sheep.

Applying Melanie Arndt's analytic categories – the 'externalization' and 'internalization' of fear in the motivations of solidarity movement exponents – to the case of Igor, it is pretty clear that

[596] Ibid., p. 56.
[597] Ibid., pp. 68.
[598] Ibid., p. 71.
[599] Ibid., p. 78.

fear was not the central category of reference in the public representation of his life story. The category of reference was 'hope', the hope to rescue these poor 'Chernobyl children' from their awful destiny and from the poor medical and living conditions that they had to endure in the orphanages of Eastern Europe, i.e. the hope to remove them from institutions that could not provide what these children needed: medical care and love. To bring them to the UK, where an entire country waited for them with open arms, was the key to their future. These were fairy tales that were the perfect subject for TV productions. And Igor's life story became the ultimate fairy tale, thanks to the attention he received: '*The Duchess of York invited him and a group of visiting Belarusian children suffering from cancer to Princess Eugenie's fifth birthday*.'[600] The mediatization of Igor's private life was the proper way for the CCLL to raise funds for their work with other 'Chernobyl children'. '*Victor [Mizzi, the founder of the CCLL and who had brought Igor to the UK] continued to receive letters and money from people who were reading articles and watching television items about Igor's progress. Victor always replied to each letter, regardless of whether any money was enclosed inside the envelopes. Many letters were from children who found it easy to identify with Igor's lively manner*.'[601] That all of this attention and excitement directed toward his person may have been difficult to handle for Igor – after all, he had just been moved from a place that he had never left before to be dropped into a completely new environment the language of which he did not even understand – does not seem to have crossed the minds of the people working for the CCLL let alone been a source of consternation. The fact that he tried to withdraw from all of the attention was ascribed by Warren to '*shyness*': '*But Igor was growing reticent about his experience as a media celebrity. […] Barbara picked up on his shyness, and stopped showing him the magazine and newspaper articles that were published about him*.'[602]

It is in no way my intention to discredit the activities of the CCLL or the activities of the organizations of the solidarity movement in general. These people dedicate an incredible amount of time, energy and money to help improve the living conditions of children from the most affected areas, a commitment that deserves recognition. But I do believe the way in which the lives and bodies of these children are exposed as part of a fundraising strategy is a topic that must be looked at in a critical light. Similarly, advertising campaigns of (half)naked African children for fundraising purposes have been widely criticized for a long time now. In the case of Chernobyl, the issue of exposing the children's bodies acquires the same level of importance since the photos often focus on highlighting physical and mental handicaps.

Warren presented a quite apocalyptic narrative of the health conditions of these children

[600] Ibid., p. 91.
[601] Ibid., p. 92.
[602] Ibid., p. 93.

when she wrote that: '*The health impacts of the Chernobyl disaster are difficult to measure, but the government estimates that there are currently over one million children deformed, damaged or diseased as a consequence*.'[603] '*A 1993 health survey examined 500 Belarusian children and found only one to be completely healthy*.'[604] She openly framed the public exhibition of Igor's life story as a means to raise awareness in British society of the health impact the accident had in the most affected areas in Eastern Europe: '*Unknown to him, he is bringing attention to the plight of the other children of Chernobyl left behind on contaminated land, and has become a symbol of their courage*.'[605] And indeed, the media hype over Igor was successful, not only in terms of fundraising but also in stirring broader public interest in the 'Chernobyl children': '*The Carlton documentary about Igor's life, Igor child of Chernobyl, was shown on Tuesday 6 June 1995. […] Barbara's and Victor Mizzi's phones began ringing with offers of help and money*.'[606] '*The duty officer at Carlton also confirmed that rarely had a program provoked so many phone calls*.'[607]

Chernobyl as a charity activity

However, it seems that this public interest described in the quotation above was rather temporary and was more a result of the tabloid press-like exploitation of Igor's private life, which provoked curiosity and sensationalism, than a wider public interest in the health effects of a nuclear accident. This detachment of Igor's life story from the discourse on nuclear energy was an inherent element of Warren's book as well. Although she narrated the consequences of Chernobyl as an apocalypse, she did not call into question the nuclear sector in general. She criticized the Soviet political system and '*man's carelessness*'[608] but not nuclear technology or the 'nuclear state' as such. Moreover, Warren made no connection whatsoever to the British nuclear sector. In Igor's life story, Britain was the saviour, a saviour that was worlds away from the events that had damaged Igor's body.

This detachment of the 'Chernobyl children' from the nuclear discourse allowed the British solidarity movement groups to address a wider audience in their fundraising activities. Chernobyl became a purely humanitarian issue and was disconnected from any anti-nuclear connotations. To help 'Chernobyl children' in Britain meant to help disadvantaged children, young victims of a Soviet accident. Even a pro-nuclearist could donate money to help these children who were a symbol of the devastating consequences when nuclear technology was put into the wrong hands and not a

[603] Ibid., p. 105.
[604] Ibid., p. 106.
[605] Ibid., p. 107.
[606] Ibid.
[607] Ibid., p. 108.
[608] Ibid., back of book.

symbol that nuclear power itself was at fault. It was better to bring these children to Britain for medical treatment, proving that Britain was far more technologically developed than these Eastern European countries – yet another rationale that underpinned the argument that such an accident could never happen in the UK and that therefore, there was no need to worry about the British nuclear enterprise. Rather than addressing questions of nuclear politics, the publications by the CCLL and the CCP focused on the joy and satisfaction they got out of their work with the 'Chernobyl children'; the care of disabled children, in particular, was described to be extremely rewarding.[609]

In order for it to be possible for the thousands of children from Eastern Europe to spend their recreational holidays in Britain, the solidarity movement groups had to rely on the support of thousands of host families. British newspaper articles published on the occasion of the accident's anniversaries have presented portraits of these families and their host children. These portraits often included calls for new host families and for donations to be made to the charities. Support did not just come in the form of the private donations and participation of families and individuals, companies and enterprises also took action. For instance, 21 co-workers of the *Nationwide electronic service network* (NESN), on the company's 10th anniversary, went to the Belarusian orphanage Zhitkovitchi to renovate the shower and laundry block. Their work was photographed by Ian Beesly and a documentation entitled *Orphans of the fallout* was published in 2001.[610] The profits from the sale of the book were to pay for further renovation works the NESN wanted to undertake in Zhitkovitchi in the years to come.

The activities of the British Chernobyl solidarity movement groups and the large support they received must be considered within the context of Britain's very strong charity culture. In Britain, charity initiatives are undertaken to support the most diverse issues, from local playgrounds to cancer research. Fundraising initiatives also take on myriad forms, be they sponsored runs or sales of homemade pastry. Thus, when comparing the entity of the French solidarity movement to its British counter-part, where British citizens are particularly receptive to supporting charity activities, the situation in France where charity initiatives are far less common must be put into perspective. Therefore, from a quantitative perspective a comparison between the two cannot be

[609] In his 2003 book, the Irish friar Liam O'Meara expressed in a particularly obvious manner how the Christian ideal 'to care for the poorest' can serve as the major incentive in helping 'Chernobyl children'. O'Meara's description of his work with these children reads in some parts like the account of a therapy session. O'Meara described the happiness he derived from looking in the thankful eyes of the children and the pain the people in Ireland felt when they had to give away 'their' children at the end of their recreation holidays. His narrative, too, did not make any connection to nuclear questions. O'Meara wrote in detail about the 'Chernobyl children's' suffering in Eastern European orphanages; the nuclear accident underlying this situation was, however, barely broached in his book: Liam O'Meara, *Fallout: the children of Belarus and the people of Ireland after Chernobyl* (Dublin: Columba Press, 2003).

[610] Ian Beesley, *Orphans of the fallout: Zhitkovitchi Orphanage Belarus* (The Darkroom Press, 2001).

undertaken. The comparison must, instead, investigate the role the solidarity movement in each country has played in the respective national Chernobyl debate.

In France, the solidarity movement has played only a marginal role in the Chernobyl debate. Although various French groups organize recreational stays for 'Chernobyl children', these groups did not become actors in the public debate on Chernobyl, of course with the noteworthy and prominent exception of the ETB. French media reporting on the anniversaries never focused on the life stories of 'Chernobyl children' or host families, either. Rather it covered the *affaire Tchernobyl* and the debate on the health effects of the accident in France. In Britain, however, from the mid-1990s onwards, the public Chernobyl debate was dominated by the topic 'Chernobyl children'. For instance, while Busby was left to self-publish *Wings of death*, the exponents of the solidarity movement published their books through bigger publishing houses, and their activities were widely covered in the media, becoming the main topic of newspaper reporting during the anniversaries of the accident.

The work of British solidarity movement groups came to be known first and foremost through accounts documenting personal life stories of 'Chernobyl children' that were featured in books, newspaper articles, and TV documentaries. This attention toward personal life stories must be contextualized within British media culture, which, particularly in the tabloids, focuses intensely on stories about individuals. As shown above, the topic of 'Chernobyl children' was discursively detached from questions of nuclear politics and was never related to British nuclear policies. In the French case, the opposite may be said. The ETB is a highly political group and its founding members amongst the most prominent actors in the national and transnational debate on the health effects of low-level radiation exposure.

When the strong British focus on the recreational stays for 'Chernobyl children' is considered in relation to the minor perceived self-affectedness, some interesting findings come to the force: According to the underlying logic of the recreational stays, Chernobyl health effects were confined to a distant location, and a holiday of only some weeks in clean British air and the ingestion of healthy British food offered the children the possibility to detoxify their systems from the radioactivity they had accumulated in their bodies. This logic at the same time implied that the situation in the most affected regions in Eastern Europe was rather manageable: only a couple of weeks every year in Britain were needed to give these children the chance at a healthy future. The fact that members of solidarity movement groups went themselves, also for longer stays, to the most affected areas implies that they did not perceive the living conditions there to be a direct threat to people's life. Thus, although they have described the situation in Eastern European orphanages and hospitals and the health conditions of children in Belarus and Ukraine using apocalyptic imagery, an

apocalyptic Chernobyl narrative with regard to present health effects of the lasting low-level radiation in the environment is only implied in part in their accounts. For there to be any perceived self-affectedness in Britain, the explicit presence of such a narrative would be essential. Since self-affectedness has played only a minor role in the British Chernobyl debate, the activities of the charity groups fit well in the dominant public picture.

In France, however, inviting 'Chernobyl children' to the *Hexagon* for holidays is in some ways a contradiction to the logic underlying the strong perception of self-affectedness: Chernobyl is there, in France. There are, indeed, various initiatives that organize recreational stays in France, but their activities never quite fit into the dominant public picture. The health impact of Chernobyl in France has become the dominant focal point of the French Chernobyl debate. Therefore, if a visible health impact does indeed exist in France, as many believe, the situation in the most affected areas in Eastern Europe must truly be considered a real apocalypse, an apocalypse as described in the work of Alexievich and Bandazhevsky – work that is fully present in the French Chernobyl debate but not really present in the British one – an apocalypse that is the result of the present health effects of the lasting low-level radiation that has permeated the environment. Such an interpretation of Chernobyl in some ways calls into question recreation holidays as such: What long term positive effects would there be for the children who for some weeks were brought to another country when they would have to return to their live in the apocalypse sooner or later?

2.2.6 Conclusion

After the early 1990s, in Britain, neither the public authorities or the nuclear industry, nor the anti-nuclear activists or other critical voices published much on Chernobyl. Chernobyl quasi-disappeared from British public nuclear discourse. This phenomenon is very likely linked to profound changes in the British nuclear policies that took place in that period. Within the framework of the privatization of the British energy sector, the British government decided at the time to refrain from building new nuclear power plants. The reactor at Sizewell B, where construction works had already begun in 1988, was completed and connected to the grid in 1995. But rather than being the pioneer heralding the arrival of a whole fleet of PWRs on British soil – as was originally intended – the government decided in May 1995 that new build projects for nuclear power plants would no longer receive public (financial) support. Consequently, CEGB renounced its plans to build new nuclear plants. In the years to follow, the old Magnox plants were shut down – today, only Oldbury and Wylfa are still in operation – and so the share of electricity generated in

Britain using nuclear energy steadily decreased. The remaining nuclear power plants were eventually sold to *EDF Energy*, the British branch of the EDF Group. This change in Britain's nuclear policies may explain why British anti-nuclear activists lost interest in Chernobyl rather than instrumentalizing the topic in the fight against the civil nuclear enterprise, as was done in France. In the mid-1990s it looked like the British anti-energy campaigners had got what they wanted, no nuclear expansion, and even more so, since it would only be a matter of time until nuclear power plants would disappear from British soil.[611] However, the problem of Sellafield still needed to be resolved seeing as operations at the reprocessing plant were ongoing. Therefore, Sellafield preserved its role as the primary target of British anti-nuclear arguments. In France, however, the reprocessing plant in La Hague was not the only thing that troubled anti-nuclear proponents. The trajectory nuclear policies in France followed in the 1990s and early 2000s was essentially the opposite of what was happening on the other side of the Channel in Britain. The French government reconfirmed its 'all-nuclear' policy and decided that the old PWRs should be replaced by a new generation of reactors, the EPR. But the government's nuclear commitment was not limited to France: the EDF and Areva were on track to become the world leaders in nuclear power generation and engineering. This policy of strong political and financial support of the French nuclear power industry instigated the severe criticism of anti-nuclear activists and led to an intensification in protest and campaign activities, one of which was the creation of the *Réseau sortir du nucléaire*. Anti-nuclear campaigns were not just directed against the new build plans but manifestly protested the entire industry, including the effects caused by Uranium mining – in France and in Africa – or the working conditions of contract workers in French nuclear power plants. The memory of the *affaire Tchernobyl* continued to invoke strong criticism of the existing power dynamics within the French nuclear techno-political regime, and thus the memory of the Chernobyl accident conformed well to the general perspective of anti-nuclear protest. Therefore, French anti-nuclear campaigners shared a strong interest in preserving the memory of Chernobyl. In Britain, however, where the anti-nuclear discourse was dominated by the *Campaign for Nuclear Disarmament* (CND), it was not really possible to integrate the accident into an anti-nuclear weapons argument, which progressively focused more on the threat of proliferation. Furthermore, public attention to the concerns of the anti-weapons movement diminished considerably once the Cold War came to an end. Thus the number of people engaged in the British anti-nuclear energy discourse – including those interested in keeping the memory of Chernobyl alive from an anti-nuclear perspective – shrank further. This 'commemorative gap' in Britain was, from the mid-1990s onwards, filled by the charity

[611] This was, however, not the case. In 2006, the British government reversed the decisions taken in the mid-1990s and announced the construction of several new plants. The next chapter will deal with this development in more detail.

organizations of the Chernobyl solidarity movement. However, these humanitarian groups often do not have a specific position on nuclear energy, or at least they do not openly communicate their position in an effort to garner support from the broadest possible group of potential donors during their fundraising campaigns. Therefore, in Britain, Chernobyl became associated solely with the destiny of a group of suffering children living in Belarus, Ukraine and Russia. Moreover, often no further differentiation was made between Chernobyl and the Soviet system with regard to which was responsible for their tragic situation.

In France, the lively debate about Chernobyl health effects ensured that the accident remained a prominent topic in public discourse as well as in media reporting. The debate of self-affectedness in Britain, however, was marginal. People today in Britain might be rather surprised that there even was a debate, however fleeting, about Chernobyl health effects. This is a remarkable difference to the French case, where the fallout was increasingly considered to be a real and actual threat to public health. From the British point of view, Chernobyl had happened far away and stayed far away, it only came to visit the country in the form of the 'Chernobyl children'. The continued restrictions on sheep farms were soon forgotten, not least because they barely made it into news reporting. Thus, unlike Jean-Michel Jacquemin in France, a British activist like Christopher Busby could not base his argument on and gain support from the existence of a common national Chernobyl memory and awareness.

What further strengthened the Chernobyl debate in France was the setting wherein the perceived self-affectedness implied a certain 'shared destiny' between the French people and the people living in the most affected areas in Eastern Europe. This might explain the substantial French reception of the work of Eastern European Chernobyl activists, such as Alexievich, and their public support, like in the case of Bandazhevsky. Since no perception of self-affectedness exists in Britain, the Chernobyl narratives of Eastern European activists were not considered to be connected in any direct or actual way to British daily life; therefore Eastern European activists did not enjoy the same level of success and recognition as they did in France. Consequently, these strongly apocalyptic narratives impacted the British Chernobyl debate to a much lesser degree.

A central reason as to why the debate on the health effects of the fallout in Britain remained marginal most likely lies in the fact that trust in the official experts and scientists essentially remained intact. Though they had been wrong in their predictions, better evaluations were eventually made available, demonstrating to the public that science was making improvements.[612]

[612] A statement on the failure of scientists to predict the impact of the Chernobyl fallout on British sheep farming made by Dr Brenda Howard of the Institute of Terrestrial Ecology illustrates this mode of thinking: '*They [the scientists] couldn't really predict what would happen, which is determined by grazing pressure, type of vegetation and innumerable ecological and environmental factors," she says. "As is turns out, their predictions were wrong. It's as simple as that.'*" In: Cook, "Render unto caesium 134."

The case of Benbecula illustrates this unbroken trust in science and public expertise: in fact, the moment scientists dismissed the claims made by local physicians the topic completely disappeared from the newspapers. The same may be said of Busby and his work: the fact that his arguments were dismissed by scientists working with the public authorities proved to be no small hindrance to their dispersion. But in France, the dynamics worked in quite the opposite direction. Here, public authorities, too, dismissed Jacquemin's claims, but it seems that their rejection only made his claims appear all the more valid; the rejection of his work is what turned them into proof of the nuclear experts' continued cover-up of the truth about Chernobyl.

In order to fully grasp why the British Chernobyl debate 'dried up' in the early 1990s, the settings and contexts that lie outside of the immediate Chernobyl discourse must also be considered. But because the history of the British Chernobyl debate from the mid-1990s to the early-2000s is to a large extent a history of a 'non-debate', it is far more difficult to connect the Chernobyl debate to wider societal issues than it is in the French case, where these connections are openly expressed in the arguments of the various actors. Despite this somewhat speculative approach, which stems from a lack of sources, there are some particularities of British (political) culture that supposedly have contributed to the almost total disappearance of Chernobyl from public discourse. One such particularity is the British media system. The British newspaper market is dominated by the *yellow press* and tabloids, and thus the currency of news value has a higher value than in other markets. This logic might explain why, for instance, newspaper reporting on Benbecula did not probe further into the wider debate on Chernobyl-related health effects but directed its attention to this topic only as long as it could provide a catchy headline. Furthermore, the British style of news reporting insists on making a clear distinction between the 'facts' and 'opinion'. Thus, it is far less common in the UK than in France for a journalist to openly take a political stance on the topic they are discussing. In fact, for this reason the French media system made it easier for journalists like Hélène Crié, Noël Mamère, or Galia Ackerman to take an active role in the Chernobyl debate and use their position in order to transmit their own opinions and narratives on Chernobyl to a wider public.[613] To be sure, there is always an exception to the rule. In this argument on the different levels of engagement of French and British journalists in the Chernobyl debate, this exception is Rob Edwards.[614] Edwards,

[613] This example shows how important it is to not only take into account the action of institutions and organizations but to link this action back to individual agency within the organizational structures and power relations. This is another reason why 'the media' is not considered as an actor in this study.

[614] See for instance his article: Rob Edwards, "Chernobyl fall-out '40 times worse' than admitted," in *The Guardian*, 28 January 1989, p. 24. The article reported on an aerial monitoring survey commissioned by *Scottish Eye*, a *Channel 4* television programme, which had registered higher rates of radioactivity than were indicated on the official maps. Edwards stated that these '*results are bound to rekindle the argument over the effectiveness of the Government's response to Chernobyl and its preparedness for any future accident.*' But although he pointed to the '*allegation repeatedly made by Labour's agriculture spokesman David Clark, MP, that 100,000 sheep from high-risk areas went for public consumption*,' Edwards did not further elaborate on the possible health effects this contaminated meat or

who in the 1970s and 1980s campaigned for SCRAM and the CND, has contemporaneously managed to be an activist and a journalist. Furthermore, in a similar manner as Hélène Crié, he wrote several books in which he openly expressed his anti-nuclear arguments. With regard to the British setting, Edwards is a rather singular case not only because he is one of the very few journalists who had continued to write about Chernobyl,[615] he is, today, really the only prominent British journalist who actually writes on current environmental issues from an explicitly anti-nuclear stance.[616]

Another particularity of British (political) culture that may have hindered the expansion of the Chernobyl debate is the British political party system. Like its French counter-part, the UK Green Party was the only political party to entirely oppose nuclear power.[617] What is different between the two parties is the role each party played in their respective country's political system. Compared to other political parties, the Greens are not a major force in France or in Britain and are primarily successful in the European Parliament elections or those at the local level. But where the French Greens were included in the government of the *Plural Left* in 1997, the 'British Greens'[618] won their first seat in the national parliament only in 2010, some thirteen years later.[619] Moreover, some of the central actors in the French Chernobyl debate are successful Green politicians, for example Noël Mamère and Michèle Rivasi; and the *affaire Tchernobyl* forms an essential part of their political identity. Thus in France, the Chernobyl debate has continued to have a political representation in the form of *Les Verts*. At the same time, with regard to the *affaire Tchernobyl*, *Les Verts* stood in opposition to the rest of the French political sphere: after all, the 1986 government, which was accused of having covered up the true impact of Chernobyl, was the *Première cohabitation* with François Mitterrand as President of the French Republic and his political

the radioactivity in the environment could have incurred. In this article, Chernobyl was an occasion to criticize the government, but it was not a public health issue. Moreover, Edwards used the article to address the nuclear issue of his primary concern: Sellafield. Therefore, he took up the argument that actually Sellafield and not Chernobyl was responsible for the high levels of radioactivity in Cumbria. And, although the article openly called into question the official narrative of the Chernobyl-induced effects in Britain, the counter narrative it presented was far less radical than what may be found in French articles.

615 Another example of critical Chernobyl reporting is Robin McKie. In a 1991 article, McKie even addressed the issue of health effects in Britain: '*The milk was drunk by children, several dozen of whom are now expected to contract thyroid cancer over the next 30 years. This disturbing after-effect did not come to light until months after the disaster. Yet at the same time, Environment Secretary Kenneth Baker had claimed radiation was "nowhere near the levels at which there is any hazard to health.*"' Robin McKie, "Britain's deadly Chernobyl legacy," in *The Observer*, 21 April 1991, p. 11.

616 In this regard, it is no surprise that also it was Edwards who, in July 2011, revealed the British government's attempt to influence media reports on Fukushima.

617 For Britain, this has partly changed in recent years as some Green Party activists, within the frame of the climate change debate, now support nuclear power plants. This issue will be addressed in more detail in the following chapter.

618 This phrasing is a simplification of reality insofar as, since 1990, there no longer exists an entity such as the 'British Greens' anymore. In 1990, the UK Green Party split into the *Green Party of England and Wales*, the *Green Party in Northern Ireland*, and the *Scottish Green Party*.

619 However, it was already in 1999 that the Green Party won a seat in the Scottish Parliament.

opponent Jacques Chirac as Prime Minister. In Britain, however, the divide that came to be created over the question of a proper emergency management in the spring of 1986 ran across party lines, not only cutting trough the Labour Party but also in part placing the Parliament in opposition to the Government. Although the dispute between Parliament and Government was settled with the publication of the House of Commons Agriculture Committee report on the Government's reaction in 1988, some Labour MPs, like David Clark, continued to broach the issue that sheep from the affected areas had slipped through and been brought to market. Therefore, it would be an oversimplification to say that the British political party system as such had hindered the expansion of the Chernobyl debate. Although the weakness of the Green Party could indeed be considered a hindering factor, the power relations between the British Parliament and the Government and the political opposition between the Labour Party and the Conservative Party in 1986 could, in theory, very well have provided the arena within which the debate could have expanded.

With regard to the particularities of the British political system that might have hindered an extension of the Chernobyl debate, many of my interview partners pointed to the general de-politicization of the British public that was generated by Thatcherism and the neo-liberal turn of the Labour Party. In their opinion – the people who raised this issue were mainly anti-nuclear minded – this general de-politicization resulted in a decline of the British anti-nuclear movement and in the transformation of questions related to nuclear power into non-issues, effectively removing them from the sphere of public debate. This study is not equipped to verify this hypothesis. To explain the lack of sources with a general non-interest in politics or, in particular, a non-interest in nuclear politics, albeit tempting, does not constitute a scientific argument for the very fact that there are no sources that could account for such an explanation. This does not necessarily mean that this hypothesis is not valid it only means that I cannot reach or corroborate this conclusion from the material I researched. However, to refuse to touch upon this argument would, at the same time, have meant that an essential part of the contemporary British anti-nuclear discourse would have been excluded from my analysis.

When a comparison is made of the ways in which the French and British each deal with and debate Chernobyl, it is interesting to notice that questions regarding the impact of the accident have in part become a social-philosophical issue in France – first and foremost in the work of the 'Caen group' – whereas in Britain, the topic is addressed from a more practical 'hands-on approach'. This holds true on the national level in relation to how the government managed the issue of contaminated sheep as well as on the transnational level in terms of the practical help given to the 'Chernobyl children'. However, every attempt to explain this phenomenon runs the risk of heavily drawing on national stereotypes. Although it might be tempting to refer to the French love of

existentialism to explain why the Chernobyl as '*the end of all common reference points*' (Lemarchand/Grandazzi) narrative has been so widely received in France, such an explanation would barely scratch the surface of the Chernobyl debate. To explain the different trajectories of the two national debates through 'national cultural mentalities' would be to run the risk of getting trapped in the pitfall of using highly biased and constructed stereotypes of 'Britishness' and 'Frenchness'. To focus too much on such stereotypes – despite the fact that there may be many good examples that 'prove' their validity – would imply that less attention was paid to the power structures at stake in the Chernobyl discourse and more precisely to the power structures that are specific to the national nuclear discourses in which the Chernobyl discourse is embedded.[620]

In order to explain the quasi-non-existence of the British Chernobyl debate, it is not enough to only take into consideration 'abstract structures'. The comparison with the French case shows clearly that the individual actors are just as important as the overarching political and cultural structures. If Alexievich's narrative had not been promoted by people like Galia Ackermann, Frédérick Lemarchand and Guillaume Grandazzi, it would never have gained such popularity in France. The same is true for Bandazhevsky's work: Had the co-workers of CRIIRAD and especially Michèle Rivasi not intensively disseminated information about Bandazhevsky and his theories on the health impact of exposure to low-level radiation his work and his imprisonment would not have received the amount of attention they did. A similar explanation can be applied to the topic of self-affectedness: without Jean-Michel Jacquemin's publications, less people in France may have related their thyroid diseases to the Chernobyl fallout. Perhaps Christopher Busby could have had a similar 'career' in Britain, but the impact of Chernobyl in Britain was only ever a secondary issue for him insofar as his interest lay with the emissions of the nuclear installations in Britain and the effects of weapons testing fallout – an area in which he received quite a bit of attention. This handful of examples reveals the importance of individual agency in the process of the politicization of a certain topic. Discursive power relations and wider political and cultural structures are only one side of the issue, and the other is whether there are actors that are willing to take up the topic or if these last prefer to focus their time and energy on other issues and topics. In Britain, an immense amount of

[620] One of my British interview partners observed that the way in which the British deal with illnesses primarily takes place in the private sphere. For instance, a British person would not openly speak about his or her thyroid cancer in public. Therefore, even if there had been an increase in the number of illnesses, people would not necessarily know, and as long as their physician did not make the link to Chernobyl, they would not come up with this idea on their own. Yet, I am uncertain whether this is more an observation that underpins the '*keep calm and carry on*' stereotype or whether it would make sense to investigate this aspect further. At any rate, I think it would be hard to generalize personal behaviour when speaking of a given illness at the national level. In general, it would be counter productive for my study to open the frame of explanations too widely: to speak of 'national debates' makes sense as long as they can be connected back to aspects of the nation state, such as elite formation systems or national nuclear programs, etc. There might be a link between people's privacy regarding their illnesses and the National Health System or British labour rights, but since I found no indication of the existence of this link, it did not follow this trail any further.

time and energy has been invested in the fight against nuclear arms; the *Aldermaston Women's Peace Camp*, which has existed since 1985 might be the most prominent example of this ongoing commitment. In this regard, it is striking that in France there is at best only a marginal debate on the question of nuclear weapons: The French secret service's bombing of the Rainbow Warrior in 1985 had just as negligible an effect on François Mitterrand's career as Jacques Chirac's commitment in the mid-1990s to French nuclear weapons testing in the South Pacific had on his re-election.

2.2 ½ Excursus: Children's nonfiction books on Chernobyl

As discussed in the previous chapter there were very few publications in Britain between the early 1990s and 2006 that aimed to provide a wider public with a certain Chernobyl narrative. However, as has also become evident in the chapter above, there is always an exception to the rule: In this case, it is the genre of children's nonfiction books, which explain to young readers the events of the accident and how they unfolded as well as the consequences. It is very difficult to collocate these books and the narratives they present within the British Chernobyl debate. They were not written by activists, and often the authors do not even have a specific connection to the topic. This can be deduced from what are at times the very superficial and contradictory narratives they relate. Therefore, the analysis of these books will not be included in the comparative chapters, but are dealt with separately in this excursus. Nevertheless, these books will be subject to the same analytic procedure used for all the other sources, the focus of which will be placed on the narrative elements of 'radiophobia' versus apocalypse, self-affectedness, and anti-Eastern European/anti-Soviet stereotypes. It was, at times, difficult to identify concrete statements with regard to these categories as most of these books do not present a specific argument but rather consist of an illustrated mix between action story, introduction to nuclear engineering, and pedagogic sensitization to the possible risks of this technology.

Graham Rickard, 1988

Soon after the accident, Chernobyl became a topic for British publishing houses that edited children's nonfiction books. The first of its kind appeared in 1988: Graham Rickard's '*The Chernobyl catastrophe.*'[621] It was published in the '*Great disaster*' series, along with other titles, among which '*The Black Death*', '*The Hindenburg Tragedy*', '*The Destruction of Pompeii*' and '*The Sinking of the Titanic*'. The book provided some interesting if incoherent accounts on the direct health impact of the fallout, for instance: '*Most of the people who lived around Chernobyl luckily escaped serious injury, because the accident happened at night. Almost all of them were safely asleep indoors. […] Some farm workers in Poland were not so fortunate, and were the first to suffer from the deadly fallout. […] Their skin itched, their eyes began to water, and they started to vomit. Soon their hands swelled and their hair fell out as the radiation sickness gradually worsened. […] Thousands of migrating birds died after coming into contact with this air-borne poison*.'[622] On the

[621] Graham Rickard, *The Chernobyl catastrophe* (Hove: Wayland, 1988).
[622] Ibid., p. 13.

clean-up operations, Rickard wrote that '*remote-controlled vehicles and protected, manned vehicles were used to clear away debris from around the plant*.'[623] However, he did not describe or discuss the 'liquidators', even though pictures of them were illustrated in the book. Finally, the chapter titled '*Who was to blame*' spoke of the '*bad design*' of the plant and '*human error*'. The belief that 'this cannot happen here' was implicit in Rickard's statement: '*as early as 1964, the design was flatly rejected in Britain as being too dangerous*.'[624] The health effects of the accident were quite apocalyptically described: '*The widespread contamination caused by Chernobyl may damage the health of millions of people*.'[625] In this regard, it was fitting that Rickard ended his story with the words: '*The countries of the world must now decide whether the advantages of nuclear power justify the risk of another similar, or even worse, disaster*.'[626]

It is rather interesting that Rickard adhered on the one hand to the official narrative provided by the public authorities with regard to the question of responsibility, but on the other he presented a rather apocalyptic narrative with regard to the health impact of the nuclear fallout and the geographic scale of the immediate effects that had nothing in common with the evaluations of national and international official experts. As for British self-affectedness, Rickard included an account on the impact of Chernobyl in the UK. He wrote that '*the cloud passed over Britain on 2nd and 3rd May, and rain in parts of Scotland, Wales and the north of England on those days caused quite serious contamination*.'[627] He also elaborated on the restrictions that had been placed on British sheep farms.[628] The narrative contained some 'catchy' stories portraying Chernobyl in a dramatic light so that the event would fit better into this '*Great disaster*' book series. Throughout, the book alternated between telling the story of Chernobyl as a 'Soviet accident' and as an apocalyptic event caused by nuclear power.

Judith Condon, 1998

Judith Condon, in her 1998 book *Chernobyl and other nuclear accidents*,[629] went a step further than Rickard and actually dismissed the narrative on the evolution of the accident released by the public authorities. The fact that the book would offer a different narrative than that contained in the 'official story' was already suggested by the title of the series in which the book appeared: '*New*

[623] Ibid., p. 18.
[624] Ibid., p. 22.
[625] Ibid., p. 24.
[626] Ibid., p. 29.
[627] Ibid., p. 14.
[628] Ibid., p. 24.
[629] Judith Condon, *Chernobyl and other nuclear accidents* (Hove: Wayland, 1998).

Perspectives'. Starting her account, Condon described a well planned and controlled test scenario: '*This was a routine procedure, enabling maintenance and repairs to be carried out.*'[630] Unlike in the official narrative, here there was no insinuation whatsoever that there had been any irresponsible action on the part of individual plant workers, and really quite the contrary: '*Several Chernobyl engineers had also gathered in the control room, hoping to learn*.'[631] On the pages that followed, illustrated information was provided on the 'liquidators', evacuations and contaminated foodstuffs. Interestingly, the chapter on '*The Consequences*' did not focus on the health effects of the radiation, but on the collapse of the Soviet Union. But although the text did not provide numbers of victims or a death toll, the illustrations unmistakably pointed in one specific direction. Next to a photo of the famous 'Chernobyl child', Igor, was a copy of a painting by Swiss artist Cornelia Hesse-Honegger of a close-up of a firebug larva that she had found in the vicinity of the Chernobyl plant in 1990: the image revealed that a section of a feeler of this bug was missing. Hesse-Honegger had gone on to paint a whole series of deformed insects from the contaminated zones, which, according to her, demonstrated the genetic mutations induced by radiation exposure.[632] Thus, through its pictures *Chernobyl and other nuclear accidents* clearly recounted an apocalyptic narrative of deformed humans and animals.

As the title suggested, Chernobyl was not the only nuclear accident broached in this book. The other sections were dedicated to Windscale and Three Mile Island. In both, Condon expressed her severe criticism of the British and US crisis management of the accidents; her attack of Windscale is worth a closer look. In the pre-history she gives of the Windscale Fire, Condon emphasized the existence of a culture of secrecy that surrounded the failure of the filters that were supposed to trap the radioactive particles: '*This had been going on for two years. […] The new Atomic Energy Authority, which in the same year took over responsibility for both bomb-making and the nuclear power programme from the Ministry of Supply, did not make these facts public*.'[633] After the fire, this same culture of secrecy was perpetuated, in particular with regard to Sir William Penney's report on the causes of the accident: '*Prime Minister Harold Macmillan insisted that it should not be published; ministers and officials were ordered to hand in their copies, and the printer was required to surrender the proofs*.'[634]

Condon's account on the impact of Chernobyl in Britain was very short. She only referred to Britain in relation to the geographical extent of the fallout: '*Contamination appeared at a greater*

630 Ibid., p. 4.
631 Ibid.
632 Hesse-Honegger's drawings were included by Grandazzi and Lemarchand in their compilation *Les silences de Tchernobyl* as well.
633 Condon, *Chernobyl and other nuclear accidents*, p. 32.
634 Ibid., p. 39.

distance days later, when rain brought down radioactive particles of caesium and iodine from the high clouds. Upland grazing areas in Wales, northern England and Scotland were among the places affected.'[635] A picture of a shepherd and his sheep illustrated this paragraph and a caption below the picture explained: '*Scotland, April 1996. This farmer's new lambs must still be tested for signs of radioactive poisoning*.'[636] Cordon did not discuss any possible health effects of the Chernobyl fallout in Britain. In her account on Windscale, however, the health effects of the fallout were attributed a prominent role. Here, Condon cited a letter that had been published in *The Guardian* in 1987. A woman who had lived close to the plant in 1957 had written the letter: '*Our daily walk was along the cinder track towards the power station; and we all drank the milk. On the night of the fire my father was fishing for sea-trout in the shadow of Windscale (he thought the men in the fields with torches were poachers!). A few years later my mother had severe thyroid problems and she was later operated on (successfully) for cancer. Next my father developed chronic, soon fatal kidney failure. We all know many, many people in the neighbourhood who have died young of cancer. Will this be part of the "official history", or do we all have to tell our own? It has proven extremely difficult for ordinary people to contact the researchers: to whom should we submit the evidence?*'[637] Thus, Condon's book underpins my argument that where in France, Chernobyl is discursively linked to the question of self-affectedness from a health-perspective as well as to policies of secrecy and disinformation on the part of public authorities, the very same questions in Britain are linked to the Sellafield-Windscale complex but not to Chernobyl.

Paul Dowswell, 2003

It took several more years for the next children's book on Chernobyl to be published: *The Chernobyl disaster* by Paul Dowswell was published in 2003.[638] The book appeared in the series '*Days that shock the world*' which included other titles, like '*D-Day*', '*Hiroshima*' or '*The Moon Landing*'. The description on the back of the book clearly expressed the focus of this series: '*This high-drama series looks at those momentous days in the last century when great and terrible things transpired within 24 hours, which would leave an impact on the history of the world for decades afterwards*.'[639] Interestingly enough, the book was translated into French that same year. However, it was not released in France, but in Canada.[640] This fact might have something to do with the

635 Ibid., p. 20.
636 Ibid.
637 Ibid., p. 40.
638 Paul Dowswell, *The Chernobyl disaster: 26th April 1986* (London: Hodder Wayland, 2003).
639 Ibid., Back of book.
640 Paul Dowswell, *Tchernobyl: 26 avril 1986, Dates clés de l'histoire* (Bonneuil-les-Eaux Montréal (Québec): Gamma

narrative Dowswell presented in his book, a narrative that did not quite conform to the French Chernobyl debate of the early 2000s.

Dowswell stuck with the 'Soviet accident' narrative: It had been the bad design and the Soviet political system that had created the conditions for this accident. Unlike Judith Condon, Dowswell did not criticize the culture of secrecy with regard to the West but referred in this regard only to the East. Furthermore, in his chapter '*From cover up to global sensation*', he negatively commented on the sensationalistic journalism used in Western media to cover the accident.[641] The degree to which Dowswell related the accident to the Soviet system becomes particularly clear in his statement that '*Chernobyl highlighted the failure of the Soviet Union. […] Within five years of the accident, the Soviet Union had collapsed*.'[642] The collapse of the Soviet political system had then made possible the exchange of knowledge between scientists from the East and West and through this exchange the security standards in Soviet reactors had been improved. Therefore, according to Dowswell, '*the accident at Chernobyl has unquestionably had positive effects on the nuclear industry*.'[643]

Although his narrative had very little in common with '*Voices from Chernobyl*', Dowswell quoted Alexievich's book twice; once in the context of the abandoned houses in the restricted zone[644] and another in relation to the work carried out by the firemen.[645] But apart from this, the scenario he described was far from apocalyptic. The estimate of the possible health effects of the fallout that Dowswell explicitly quoted was amongst the lowest calculations: *'Because the effects of radiation levels on the human body are difficult to predict, it is currently impossible to say how many people in the world have been affected by the disaster. One estimate suggests that, in the years to come, perhaps an additional 2,500 people worldwide will contract cancer as a result, but other studies suggest that the figure will be far higher*.'[646] Dowswell went on to add an explanation for these higher figures: '*These figures (particularly those in the hundreds of thousands) are undoubtedly exaggerated – especially by Ukrainian politicians anxious to claim as much aid as they can for their poor, newly independent country*.'[647] However, further down the page, he stressed that the true figures would only be known in a few decades, if ever, and he conceded that then the death toll would probably be adjusted upward and rest at a much higher estimate than many believed today. This zig-zagging in Dowswell's narrative is common to many Chernobyl accounts: on the one hand, the authors take critical distance of the high estimates, claiming that they were

École active, 2003).

641 Paul Dowswell, *The Chernobyl disaster*, p. 35.
642 Ibid., p. 38.
643 Ibid., p. 41.
644 Ibid., p. 37.
645 Ibid., p. 27.
646 Ibid., p. 39.
647 Ibid., p. 42.

only finalized for purposes of political campaigning. At the same time, they acknowledge that the real numbers are yet to be known.

Scott Ingram, 2005

The next book of this genre of children's nonfiction books on Chernobyl appeared in 2005: *The Chernobyl Nuclear disaster.*[648] Written by the US author Scott Ingram and published in New York, it was distributed in the UK as well; for this reason it is mentioned here. The book was part of the series '*Environmental disasters*', which also included such titles as '*Exxon Valdez oil spill*', '*Hurricane Andrew*' or '*San Francisco earth quake*'. It is interesting that this series did not differentiate between industrial accidents with an environmental impact and the impact seismic and weather phenomena had on humans. The degree to which these forms of disasters were conceptually merged in the book became obvious in the introduction, where Ingram wrote: '*The death toll as a result of the blast and radiation exposure was originally listed at 31 people. […] At first glance, the toll of the Chernobyl accident might seem insignificant compared to thousands of people killed in typhoons, for example, or the enormous areas destroyed by forest fires*.'[649]

Ingram's narrative of Chernobyl is interesting in many regards. For instance, his statement of the geographic scope of the impact differs from many other accounts: A map included in the preface showed the area affected by radiation and also the areas that were marked as 'all clean' including, among many other countries, Greece, Turkey, France, and Britain. According to Ingram, the cause of the accident had less to do with technology than anything else: '*The mishap was years in the making, and much of the blame for it has now been placed on Soviet scientists and government leaders*.'[650] Although published in 2005, the book contained much Cold War rhetoric, contrasting 'bad' USSR nuclear policies to 'good' US nuclear policies. But Ingram did not criticize only USSR nuclear policies: '*Although the loss of life of nuclear plant workers has been much less than that of coal miners and oil field workers, past nuclear accidents have not been well publicized in the media at large. In most instances, no matter where the accident took place, government authorities went to great length to assure the public that there was no great danger*.'[651] However, there was one important exception to this rule: '*U.S. government leaders reacted with speed and were honest with the public regarding the 1979 nuclear accident at T.M.I.*'[652] Ingram also painted another actor of the nuclear sector in a very positive light: the IAEA. '*The IAEA established safe operation procedures*

[648] Scott Ingram, *The Chernobyl nuclear disaster* (New York/London: Facts On File, 2005).
[649] Ibid., p. ix.
[650] Ibid., p. 3.
[651] Ibid., p. 14.
[652] Ibid., p. 21.

and developed a system for reporting any safety violations.'[653] In conformity with this narrative, the International Chernobyl Project – the highly criticized expert committee on Chernobyl – was described as a '*charitable organization formed to support the development of medical community and humanitarian aid programs that serve the (Chernobyl) region*.'[654]

Ingram's statement on the health effects of the fallout could hardly have been more vague: '*Although 31 deaths are attributed to the actual event, studies in subsequent years have led to the conclusion that deaths and damage from the accident were long-term and far-reaching*.'[655] Although the chapter '*The Human Toll*' quoted Edmund Lengfelder[656] a number of times, it shifted to the 'radiophobia' explanatory pattern and wrapped up the narrative with an account on '*The Chernobyl Syndrome*': '*This psychological condition of extreme stress among people in Belarus, Russia and Ukraine is characterized by people's overwhelming uncertainty about the effects of the disaster on the health of themselves and their children. This feeling of helplessness has led to increased alcoholism and clinical depression in millions*.'[657]

Victoria Parker, 2006

The last example of this genre of literature that has been published thus far in Britain is the book by Victoria Parker: *Chernobyl 1986*. It appeared in 2006 in the series '*When disaster struck*',[658] alongside titles such as '*The Asian Tsunami*', '*The Black Death*', '*The Challenger*', '*The Exxon Valdez*', '*The Hindenburg*', '*Pompeii*' and '*The Titanic*'. Although its acknowledgements to the *Children of Chernobyl US Alliance*, the *Nuclear Information Resource Service* and the *Union of Concerned Scientists* hinted that an anti-nuclear account was to follow, the narrative presented by Parker was, like with Ingram, more anti-Soviet than it was anti-nuclear. In the chapter on '*Why was Chernobyl built*', Parker stated that the USSR did not have enough coal or oil and not enough money to buy these resources from abroad, almost as though nuclear power was a valid option in electricity generation for poor countries. Furthermore, she argued that '*the Soviet Union wanted to develop nuclear weapons, to keep up with the United States and the United Kingdom […]. This is another reason why the Soviet government wanted to produce nuclear energy*.'[659] Parker's narrative

653 Ibid., p. 4.
654 Ibid., p. 28.
655 Ibid.
656 Edmund Lengfelder is a German radiation biologist and doctor who, together with Sebastian Pflugbeil and Inge Schmitz-Feuerhake, is an active member of the *Gesellschaft für Strahlenschutz*. He is the founder of the *Otto-Hug-Strahleninstitut* and has stressed in his work the severity of the health effects caused from exposure to low-level radiation.
657 Ingram, *The Chernobyl nuclear disaster*, p. 79.
658 Victoria Parker, *Chernobyl 1986: an explosion at a nuclear power station* (Oxford: Raintree, 2006).
659 Ibid., p. 8.

also implied that the USSR could never keep up with Western nuclear powers, given that, as with the case of Chernobyl, '*many of the workers were poorly trained*.'[660]

As for the '*Health Costs*' of the accident, Parker started her account with the statement: '*Thirty-one people died due to the explosion. This is a matter of controversy, but it seems that thousands more have died or become ill because of the effects of the disaster. Many have suffered terrible stress*.'[661] What followed were quotations of figures from reports published by the international organizations and a short account on aid projects run by NGOs. The double page on aid projects was illustrated with photos of children and teenagers in hospitals. In order to link the case of Chernobyl to larger questions, Parker dedicated the last pages of her book to a general statement on nuclear politics, concluding: '*Most countries do all they can to make sure nuclear power is produced safely. But accidents can happen. We all need to reduce the amount of energy we use. We also need to invest money in developing and using safer renewable energy sources*.'[662]

Conclusion

The books discussed above are all very different one from the other, not only with regard to the narratives of the accident they present but also with regard to the range of Chernobyl-related topics they deal with, their length, and the illustrative techniques applied; some use photographs, others use drawings and illustrations. But what they all have in common is a specific target group: children and teenagers. It is very interesting that every single of these books was published in a book series that transformed the topic of Chernobyl for its readers into just one historical event among others. While they differed very much on the kind of 'facts' they presented, the authors all aimed to provide a 'balanced' account that was informed by different sources. This is why, as shown above, many accounts were quite contradictory.

In France, there is also a big market for children's nonfiction books. However, I do not know of the existence of any book published in France that may be comparable to these. A possible explanation as to why Chernobyl became a topic for this book genre in Britain but not in France might be found in the intensity of the ongoing French debate. Publishing in France on Chernobyl implies that one has taken a clear stance with regard to the debate on self-affectedness. It seems that instead of getting involved in this debate, French youth literature publishing houses have preferred not to publish on this subject. In Britain, however, Chernobyl has never really been considered a 'British' topic. It was quickly considered an event of the past that had happened at a great distance

[660] Ibid., p. 10.
[661] Ibid., p. 42.
[662] Ibid., p. 49.

from the country. This interpretation rendered it possible to provide children and teenagers with a narrative of this accident without running the risk of being blamed for publishing politically slanted statements and narratives.

2.3 2006: The Chernobyl 'renaissance' within the 'nuclear renaissance'

The debate about the health effects of Chernobyl gained major prominence on the occasion of the accident's 20th anniversary. It was particularly at the transnational level that the Chernobyl debate took place during this specific moment in time. The transnational level will be discussed in depth in the following chapter. This chapter, however, will look at the degree to which the national debates of France and Britain differed one from the other in 2006. Much like the previous chapter, this chapter opens with a brief observation of the way in which the media approached the topic of Chernobyl in this period.

British newspaper editors and journalists did not consider the 20th anniversary of Chernobyl a major news event.[663] Although, compared with the media output of 1996, there seems to have been a significant increase in the number of articles published,[664] this coverage is quite modest compared to that in France. In France, the media dedicated an enormous amount of space to Chernobyl throughout the second half of April 2006; the anniversary was presented as kind of an event in itself, and radio and TV[665] stations dedicated substantial broadcasting time to Chernobyl. The national newspapers started their reporting on Chernobyl already in mid-April. Around 26 April, most of the French newspapers published several pages long dossiers, which addressed various aspects of the Chernobyl accident, primarily the reasons for why the accident happened, the current situation in the highly affected areas in Eastern Europe, and the debate about the health effects of the fallout in France. These dossiers allocated extensive space to critical voices, which called into question the 'official narrative' with regard to the affected areas in Eastern Europe as well as the consequences of the accident in France.[666] Special attention was paid to the interpretations of the 'Caen Group' (Guillaume Grandazzi, Frédérick Lemarchand, Galia Ackerman, Jean-Pierre Dupuy) and Wladimir Tchertkoff; their publications were often recommended to the readers should they wish to inform themselves further on this topic.[667] In this manner, the French media coverage of Chernobyl's 20th anniversary was strongly marked by an 'apocalyptic' Chernobyl narrative, and at the same time it prominently addressed the question of self-affectedness by recalling the *affaire*

[663] This statement is a result of my consultation of the newspaper database *Newsbank* and my hermeneutic analysis of the results for the search key 'Chernobyl' for the period between 15 and 30 April 2006.

[664] As described in the footnote above regarding newspaper reporting around the 20th anniversary, I conducted a similar search in the newspaper database *Newsbank* for the 10th anniversary, wherein I analysed the results for the search key 'Chernobyl' for the period between 15 and 30 April 1996. However, the entries in *Newsbank* for this time span do not reflect the real number of articles on Chernobyl, given that many newspaper articles of 1996 have not yet been included in the *Newsbank* database.

[665] For the coverage of Chernobyl by *TF1*, see: http://www.tf1.fr/recherche/?query=tchernobyl&x=0&y=0&n=1 (last accessed: 15 June 2013).

[666] For a detailed analysis of French newspaper coverage of the 20th anniversary, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 168-171.

[667] Further information on these publications is provided in chapter 2.3.3.

Tchernobyl.

Whereas in France self-affectedness had dominated the Chernobyl debate since the mid-1990s, in Britain this issue was in some ways re-discovered only on the occasion of the 20th anniversary of the accident. After having almost completely disappeared from newspaper reporting, the continued restrictions on sheep farms once again resurfaced in 2006. In this regard, on 13 April, *The Guardian* published an article titled '*Sheep farms under curbs see no end to Chernobyl fallout*.'[668] This article provided the latest news on the farms that were still subject to the restrictions and reported that '*now there are 359 in Wales, nine in the Lake District and 10 in Scotland, involving 200,600 sheep*.'[669] '*No one knows when the restrictions will end*.' What is particularly interesting about this article is the fact that it presented the persistence of the restrictions as though it were a new development: '*Hundreds of British sheep farms still blighted by the effects of radioactive fall-out after the world's worst nuclear accident, two decades ago at Chernobyl, will have to follow strict safety measures for years to come, it emerged yesterday.*' Moreover, the article basically implied that it had not been the journalists' non-interest in the topic that had led to this lacuna in coverage and its eventual disappearance from the public arena, but rather because '*few farmers wish to talk about their experiences, being worried about scaring consumers.*'[670] However, the article made it clear that there was nothing to worry about since '*the [food standards] agency says the controls have effectively protected public food safety*.' Not only was there nothing to worry about in terms of self-affectedness, the article also went on to present the health effects of Chernobyl in general in quite an 'un-apocalyptic' manner, ending with the sentence: '*Officially, fewer than 50 people have so far perished as a result of Chernobyl, according to a study last year by the IAEA, the UN and the WHO*.' Aside from this interesting interpretation of the Chernobyl death toll – which entirely excluded probabilistic cancer deaths – a closer look at this article sheds light on the deterioration of the state of general public knowledge on the British nuclear fleet as was expressed in the kind of information the author felt was necessary to include. When quoting a sheep farmer from Wales that the lasting restrictions '*make you think twice about living in the shadow of a nuclear power station, if they ever opened another one here*,' the author added: '*when Chernobyl happened there was a nuclear plant operating just a few miles south of the farm at Trawsfynydd*' – an explanation that had not been necessary in the articles on sheep farm restrictions in Wales in the 1990s, since the location of Trawsfynydd was considered common knowledge at the time.

---

668 James Meikle, "Sheep farms under curbs see no end to Chernobyl fallout," in *The Guardian*, 13 April 2006.

669 In the following years, this number decreased further. According to a newspaper article in *The Guardian,* in 2009, '*there were still 355 farms in Wales (in and around Snowdonia), 9 in England and 7 in Scotland. All the farms in Northern Ireland were "derestricted" in 2000*.' See: Leo Hickman, "What is safe to eat?," in *The Guardian*, 29 December 2009.

670 Meikle, "Sheep farms under curbs see no end to Chernobyl fallout."

A more general look at British newspaper reporting on the occasion of Chernobyl's 20th anniversary reveals that there are some more interesting findings. Although British newspapers dedicated much less space and attention to Chernobyl than French newspapers in 2006, similarity in the reporting on another level becomes evident. Similarly to the French reporting, British regional as well as national newspapers addressed a wide range of issues connected to the accident: from life stories of people in the most affected regions in Eastern Europe,[671] to the 'liquidators',[672] and the state of the wildlife in the restricted area around the plant.[673] Yet, there is a very important difference in the priorities that are identified: whereas in France, the *affaire Tchernobyl* – often paraphrased as '*the cloud that stopped at the border*' – and the debate on the health effects of the fallout in France itself formed a central part of the reporting, self-affectedness continued to be given only a marginal place in British coverage. Like in 1996 and especially in the regional newspapers, the activities of local Chernobyl solidarity movement groups were the primary interest. The focus was placed on the life stories of people who were actively involved in these groups as well as on the many children who had been hosted by these people in Britain over the years.[674] These stories were often connected to fundraising drives in support of the Chernobyl aid groups, and primarily the biggest associations CCLL and CCP.[675]

Although self-affectedness still did not play a major role in British news reporting, the topic was broached in some articles. And most interestingly, at least one journalist began to speak of the health effects caused by the radioactive fallout as a scientific finding and no longer as rumours or speculations – as had occurred with the Benbecula cancer story in 1996. On 23 April 2006, the national quality newspaper *The Independent on Sunday* published an article entitled '*Chernobyl "still causing cancer in British children"*' which started with the statement: '*More than a third of Britain is still contaminated by radioactivity from the Chernobyl disaster two decades ago, and children are getting cancer as a result.*'[676] Here in this article, British self-affectedness had drawn up alongside French self-affectedness: the Chernobyl fallout had caused thyroid cancer in the country's children. What is even more remarkable is that this article also mirrored the positions taken during the French *affaire Tchernobyl* in the way that it addressed the question of a deliberate cover-up by the government, albeit in a more subtle way compared to the intensity of the accusations that were brought against French officials: '*Scientists have found rates of thyroid cancer in children in*

671 See for example: Juliette Jowit, "Dispatch: Chernobyl's generations of suffering," in *The Observer*, 23 April 2006.
672 See for example: Jeremy Page, "Chernobyl hero remembers the men who saved Europe – Factbox," in *The Times*, 22 April 2006.
673 See for example: Western Daily Press, "Nature's cure for nuclear fallout: Wildlife heaven," 21 April 2006.
674 See for example: The Sun, "A Life Line to radiation kids," 25 April 2006; Hull Daily Mail, "We won't forget Chernobyl victims," 25 April 2006.
675 See for example: Yvonne Bolouri, "Nuclear family of love," in *The Sun,* 25 April 2006.
676 The Independent on Sunday, "Chernobyl 'still causing cancer in British children,'" 23 April 2006.

Cumbria, the worst-affected part of England, rose 12-fold after the catastrophe – and blame fallout from the radioactive cloud that spread from the stricken reactor. This confounds government assurances at the time that the radiation in Britain was "nowhere near the levels at which there is any hazard to health."" This article, however, lies on the far extreme of what was said in British newspapers in terms of Chernobyl health effects in Britain on the occasion of the 20th anniversary. Therefore, it is in no way representative of British media coverage in 2006.

Yet, the regional Liverpool-based newspaper *The Daily Post*, also picked up the topic of Chernobyl related illnesses in Britain and on 26 April 2006 it printed the article '*Wales: Did Chernobyl disaster cause my cancer?*'[677] Here, the attention was not directed toward increases of cancer in children, but – like in the case of Benbecula – on an increase in cancers among farmworkers. As with Benbecula, this self-affectedness was presented as a speculation: '*People in rural north-west Wales are worried cancer levels are higher than the national average. But they are also keen to avoid scare-mongering in case it damages tourism and farming.*' Thus, there is a parallel between France in Britain insofar as in both countries it was discussed whether an evaluation of the true health effects of the fallout was suppressed for fear of negative economic repercussions. However, whereas in France this was an argument brought forward by 'Chernobyl victims' who accused the government setoff having placed their health at risk in order to avoid negative effects for the French economy, in Britain, it was people in the affected regions who did not want to have the issue of health effects of the fallout publicised for fear of the impact on their local economy. If this argument, expressed in the article cited above, is taken at face value, then British self-affectedness in terms of health effects from the fallout was perceived as an individualized threat, and an eventual disclosure was seen as a risk that there would be a change for the worse. On the contrary, in France, the 'Chernobyl victims' poured all their energy into obtaining this disclosure not least because it promised monetary compensation and therefore was perceived as a change for the better.

Putting this far extreme of reported self-affectedness in relation to the general British newspaper coverage of Chernobyl's 20th anniversary, it is important to understand that the typical way in which Chernobyl was discussed in British newspapers consisted primarily of relatively neutral remarks on the fallout of 1986 and the sheep farm restrictions, but did not generally make any mention of health effects caused by the fallout. Most often, the articles presented Chernobyl as an event that had 'just happened'. The rainfalls and the geographic constitution of the country were blamed for the problems that were caused by the fallout in Britain and not the civil use of nuclear energy. An article in *The Times* of 26 April 2006 can be considered an ideal-type of this common

[677] Andrew Forgrave, "Wales: Did Chernobyl disaster cause my cancer?," in *Daily Post*, 26 April 2006.

narrative: '*High-altitude winds spread the cloud of radiation over northern Europe, and on May 2, 1986, the fallout passed over Britain. [...] The toxic cloud would have caused no harm had the weather stayed dry, but local rainstorms washed down the contamination over a swath of Cumbria, Wales, Scotland and Northern Ireland. Radioactive caesium-137 contaminated the ground, and would have been bound up relatively safely in most soils. But the peat in upland areas kept the substance in solution and it became absorbed by grasses that were grazed by sheep. More than a million sheep were contaminated and emergency orders were imposed to prevent their sale. The legacy of that disaster still lingers in Britain. Although radiation levels have fallen over the years, some hills are still so contaminated that 375 farms and more than 200,000 sheep remain embargoed. No sheep can be moved out of affected areas without a special licence, the flocks are scanned regularly for radioactivity, and contaminated animals banned from markets.*'[678] The fact that the account stops with the observation that the radionuclides had been taken up by the sheep may be considered a statement all on its own. There is no mention of the possible effects were the radionuclides to travel up the food-chain. People are not even mentioned in this article. The account somehow gives the impression that the only creatures that take up radionuclides are sheep. In this regard, it is very interesting to look again at the above-cited article of 26 April 2006 in *The Daily Post*. This article, too, broached the issue of sheep farm restrictions, but with an added detail that was quite unique for British media reporting on the 20th anniversary: '*Sheep were found to be contaminated and each year around 103,000 lambs are still tested for radioactivity before slaughter. A further 210,000 ewes and lambs are paint marked and licensed before being moved to grazing outside restricted areas. Because of the high level of monitoring, Welsh farmers say their lambs are the safest in the world. But they also claim animals have received more attention than humans.*'[679]

Other than the health effects of the fallout in Britain, another aspect of perceived self-affectedness is the way in which risks linked to Chernobyl are placed in relation to the national nuclear fleet or even other hazards. In this regard as well, the article in *The Daily Post* offers up an interesting perspective. The author of the article quoted a farmworker saying '*"We've lived through BSE and foot-and-and-mouth and we don't want any more health scares"*' to which the journalist added: '*his farm is also down-wind of the decommissioned nuclear power station at Trawsfynydd.*'[680] This tendency to relate Chernobyl to 'British-made' hazards, especially to the threat national nuclear plants represented, has been an inherent element of the British Chernobyl debate from the very beginning and has also showed up in the newspaper reporting of 2006 as well. Another example in

[678] Paul Simons, "Ill winds carried Chernobyl poison," in *The Times*, 26 April 2006.
[679] Forgrave, "Wales: Did Chernobyl disaster cause my cancer?"
[680] Ibid.

this regard is an article that was printed in the regional newspaper *Wales on Sunday* on 23 April 2006. It quoted Dr Keith Baverstock saying '*that enough radioactive material to fill Albert Hall five times was being stored in "very much less than ideal conditions" at British power stations, including Wylfa on Anglesey.*'[681] The London-based national newspaper *The Daily Telegraph* made the connection between the British nuclear enterprise and the Chernobyl accident in a more 'traditional'[682] way: on 25 April 2006 it dedicated an entire article to the topic '*Windscale fallout from 1957 reactor fire still affecting Cumbria.*'[683]

2.3.1 Public authorities

France

CEA

In France, the 20th anniversary of Chernobyl was not just widely covered by the media, the public authorities also published intensively on the accident. The CEA used the anniversary as an opportunity to communicate its assessment of the accident to a broader audience.[684] It launched a comprehensive website with information on Chernobyl.[685] This website included a list of hyperlinks to (international) organizations that had been involved in the evaluation of the situation in the most affected areas, such as IAEA, IRSN, World Bank etc, as well as a text providing a general overview of the topic. This text spoke of the causes of the accident – faulty reactor design and human failure on the part of the plant workers – and it included a statement on the passage of the Chernobyl 'cloud' over Europe and France, which had resulted in a multitude of studies that looked into the impact of the fallout. This general account, however, did not further elaborate on the results of these studies. Instead, the website posted a position paper by Bernard Bigot.[686] Bigot, at this time the

681 Wales on Sunday, "Remembering Chernobyl," 23 April 2006.

682 A possible connection to Sellafield/Windscale had been broached even in the debate regarding the increase in cancer rates on Benbecula. The article in *The Herald Scotland* of 1 April 1996 that was discussed in the chapter above had referred to a study that was conducted in the early 1990s on the Western Isle North Uist, which had revealed that '*some islanders had five times more radioactivity than people elsewhere in Scotland. At the time, the excess levels of caesium found in the islanders was attributed to discharges from the Sellafield nuclear processing plant entering the food chain in the Western Isles*.' However, other '*possible links with the firing of rockets, possibly tipped with radioactive material, from the military range at Benbecula and the presence of a powerful early warning radar system*' were discussed also. See: Buie, "Cancer island inquiry."

683 Roger Highfield, "Windscale fallout from 1957 reactor fire still affecting Cumbria," in *The Daily Telegraph*, 25 April 2006.

684 This paragraph is a summary of the corresponding chapter in: Kalmbach, *Tschernobyl und Frankreich*, pp. 134-137.

685 CEA, *Accident de Tchernobyl: quelques repères sur le sujet*: http://www.cea.fr/energie/accident-de-tchernobyl-reperes/reperes. (The website is still available but the information presented has changed since 2006, last accessed: 15 June 2013).

686 Bernard Bigot, *Point sur les conséquences sanitaires de l'accident de Tchernobyl* (CEA, 2005). Available online: http://www.cea.fr/energie/accident-de-tchernobyl-reperes/pour-en-savoir-plus. (last accessed: 15 June 2013).

Haut-Commissaire à l'Énergie Atomique (High Commissioner for Nuclear Energy) had already drafted this paper in 2005, the objective of which was to provide a precise statement on the health-related consequences in France that people, and especially French politicians, could refer to in the upcoming debate for the 20th anniversary.[687] Bigot's account of Chernobyl opened with a description of the causes of the accident but very soon switched to its principal topic, the *affaire Tchernobyl*. He stressed that a wide range of data had been available in May 1986. These data had been compiled from the substantial number of measurements taken by the French public authorities and had been made available to the public.[688] Bigot then went on to address the various maps that had been drawn up to show the radioactive deposits in France. He explained that the reasons for why there were differences amongst the maps lay in the fact that different models had been used to create them. As for the health effects of this radiation, he stated that the only possible effect could be that of thyroid cancer; however, none of the cancer registers (including the PACA-Corse Region) had shown any increase. Even were additional cases of thyroid cancer to occur, this number would be so low that it would not be possible to detect these incidences.[689] Thus, he stated, '*concerning the risk that resulted from Chernobyl, we are confronted today with a finding that is purely statistical.*'[690] Aside from the debate on Chernobyl health effects in France, Bigot's paper focused on the criticism that had been directed at the French crisis management. From his point of view, there was no reason to call into question the public authorities given that their action had been absolutely proportional to the situation at hand.[691] Even were additional cases of thyroid cancer in France to have been verified using today's calculations, any countermeasures the government could have taken would have been disproportional to the increase in the fear and the negative economic consequences these countermeasures would have provoked.[692] Bigot did not limit his discussion of Chernobyl's impact

[687] Ibid., p. 3: '*L'objet de cette note est de faire un point précis sur ses conséquences sanitaires en France, permettant aux responsables gouvernementaux qui ne manqueront pas d'être légitimement interrogés à cette occasion, d'avoir une vision précise de la réalité des faits, telle qu'elle peut être déterminée avec toute la rigueur souhaitable après les derniers travaux de recherche conduits, et de pouvoir ainsi s'exprimer sur ces bases, s'ils le souhaitent.*'

[688] Ibid., p. 6.

[689] Ibid., 14: '*En contre point de ces incertitudes larges, il est important de savoir que, jusqu'en 1999, dernière date complète disponible à ce jour, aucun des registres de cancers, y compris celui de PACA-Corse, n'a montré d'augmentation particulière de l'incidence des cancers thyroïdiens. Cependant, compte tenu des faibles doses concernant la France, il est possible que le temps de latence atteigne quelques dizaines d'années. En somme, si un excès est théoriquement possible, et sous réserve que la poursuite du bilan des registres continue à montrer des valeurs homogènes avec ce qui a été observé jusqu'ici à l'échelle nationale et internationale, cet éventuel excès n'est pas discernable de l'incertitude statistique associée au nombre de cancers de la thyroïde dits spontanés.*'

[690] Ibid.: '*Concernant le risque résultant de Tchernobyl, on se trouve aujourd'hui face à un constat purement statistique.*'

[691] Ibid., pp. 18.

[692] Ibid., p. 18: '*Les moyens d'éviter certaines doses étaient-ils faciles à mettre en œuvre ? En théorie oui, puisqu'il aurait fallu, sur une période limitée, recommander de ne pas consommer de lait frais (déviation du lait contaminé vers des formes consommables après décroissance radioactive, par exemple fromages et lait stérilisé ou en poudre), de bien laver les légumes et fruits frais, d'éviter les activités intenses de plein-air et de limiter le pâturage du bétail. Si ces moyens n'ont pas été utilisés, c'est sans doute parce que le bénéfice dosimétrique et donc sanitaire avait été jugé trop faible devant le risque d'amplification des craintes et la possibilité de conséquences économiques*

to the case of France. He also provided an evaluation of Chernobyl health effects in Eastern Europe stating that the only effect that could actually be observed was an increase in thyroid cancer in children. With regard to other cancers, leukaemia and the general mortality rate, no effects were as of yet discernable.[693] The fundamental stance Bigot took in this paper was to emphasize the continuity of the excellent work of French nuclear institutions and experts. In his opinion, there was no reason to criticize any of the decisions or evaluations that had been taken, in 1986 and in 2006 alike. Hence, Bigot appealed to the French government to finally put an end to the misleading debate on Chernobyl health effects in France.[694]

IRSN

Like the CEA, the IRSN published on its website an extensive dossier on Chernobyl on the occasion of the 20th anniversary.[695] This dossier[696] assembled not only PDF-versions of the general reports that the IPSN and later its successor IRSN had published every year since 1996 but it also contained information and maps on the radioactive fallout in France. In addition, the website included a detailed bibliography, which also listed publications by a number of critical voices that either attributed more or less importance to the Chernobyl impact than the IRSN had. In its account on the Chernobyl death toll, the IRSN noted the factors that rendered it so difficult to provide a concrete number: the lack of knowledge with regard to the health effects of low-level radiation, the difficulties in conducting representative studies, etc. Taking these difficulties into account, the IRSN concluded that '*generally speaking, the prediction of the number of deaths caused by the received doses is tarnished by severe incertitude*.'[697] In order to show the range of this uncertainty, the IRSN quoted its analogous British institution, the NRPB, which had calculated the death toll to be

difficilement cernables. On peut considérer que cette décision fut globalement raisonnable compte tenu du fait qu'il n'y a pas à ce jour d'anomalie imputable avec certitude à l'accident de Tchernobyl dans les incidences de cancer thyroïdien comptabilisées en France.'

693 Ibid., p.13: '*Pour ce qui concerne les autres cancers, les leucémies et la mortalité en général, rien de particulier n'a pour le moment été mis en évidence.*'

694 Ibid., pp. 23: '*Afin d'éviter l'écueil des débats fondés sur des suspicions et des hypothèses nécessairement réductrices, et donc toujours ouvertes à la contestation, en ayant en outre présent à l'esprit les procédures judiciaires en cours, je recommande vivement une communication gouvernementale sur l'éventuel impact sanitaire de Tchernobyl en France uniquement fondée sur les faits avérés.*'

695 The following short account is an adaptation of the corresponding chapter in: Kalmbach, *Tschernobyl und Frankreich*, pp. 138-140.

696 In 2009, the website '*Les leçons de Tchernobyl*' was available at the following web address: http://www.irsn.org/index.phpposition=lecons_tchernobyl_accueil. There is now a new dossier on Chernobyl available which was published on the occasion of the 25th anniversary, see: http://www.irsn.fr/FR/connaissances/Installations_nucleaires/Les-accidents-nucleaires/accident-tchernobyl-1986/Pages/Tchernobyl.aspx (last accessed: 15 Mai 2014).

697 IRSN, *Les leçons de Tchernobyl – Évaluer les conséquences et protéger les personnes*: http://www .irsn.org/index.php?position=lecons_tchernobyl_ la_mortalite_due_a_l_accident: '*De façon générale, la prédiction du nombre de décès imputables aux doses reçues est entachée de grandes incertitudes.*' (last accessed: June 2009)

anywhere between 4,200 and 80,000. With regard to the health effects in France, the IRSN pointed to the study the IPSN had conducted together with the InVS in 2000[698] and repeated that, according to the models applied, the number of additional incidences of thyroid cancer in children continued to fall within the natural range of incidences and therefore any cancers caused by the accident would not have been detectable.[699] To a large degree, the IRSN's Chernobyl dossier was dedicated to the topic of nuclear safety and to examining how this field had been challenged by the accident. The IRSN stressed that the studies conducted in the most affected regions in Eastern Europe were of paramount importance to gain knowledge about living conditions in contaminated areas.[700] Thus, the IRSN was quite concerned about the health situation in Eastern European and believed that the consequences of the accident had not yet been fully evaluated. However, the IRSN saw no reason for why there should be a debate about French self-affectedness as, from the IRSN's perspective, even if a health impact were to exist in France, it would be far too small to be detectable.

In direct relation to the 20th anniversary, albeit with a slight delay, Philippe Renaud, Didier Champion, and Jean Brenot published *Les retombées radioactives de l'accident de Tchernobyl sur le territoire français.*[701] The book came out in 2007 and was an updated version of the 1999 book written by Philippe Renaud et al., *Les retombées en France de l'accident de Tchernobyl*. As was stated in the preface, this new book was part of the efforts of the IRSN to reach a balance regarding the Chernobyl health effects on the occasion of this important anniversary.[702] In the chapter '*Estimation des risques sanitaires en France*,' the authors stated that the calculated doses of radioactivity justified an evaluation of health effects in France, in particular with regard to possible thyroid diseases.[703] However, the results of the evaluation they presented several pages later asserted there was no reason to be worried about the Chernobyl health effects in France: '*The results show*

---

698 This study is discussed in chapter 2.2.1.

699 IRSN, *Les leçons de Tchernobyl – Exposition des personnes en France*: http://www.irsn.org/index.php?position=lecons_tchernobyl_exposition_des_ personnes_en_france (last accessed: June 2009).

700 IRSN, *Les leçons de Tchernobyl – Mieux agir en territoire contaminé*: http://www.irsn.org/index.php?position=mieux_agir_en_territoire_contamine (last accessed: June 2009).

701 Philippe Renaud, Didier Champion, Jean Brenot, *Les retombées radioactives de l'accident de Tchernobyl sur le territoire français. Conséquences environnementales et expositions des personnes* (Paris: Éditions Tec & Doc, 2007).

702 Ibid., p. ix: '*Après la première édition par l'IPSN, en 1999, d'un ouvrage intitulé Les retombées en France de l'accident de Tchernobyl, ce nouveau livre dresse une synthèse actualisée des connaissances acquises sur la contamination radioactive du territoire français, plus de vingt ans après la catastrophe nucléaire. Depuis la première édition, de nombreux travaux ont été poursuivis principalement par l'IPSN, pas l'OPRI, puis par l'IRSN né de la fusion de ces deux organismes, ainsi que par lINVS. L'année 2006 a été pour l'IRSN l'occasion de dresser le bilan de l'ensemble de ces travaux et d'en tirer des enseignements pour l'avenir, en s'appuyant sur une analyse de son conseil scientifique. Le présent livre constitue l'une des pièces finales de ce bilan, qui complète les éléments déjà rendus publics par l'Institut, notamment sur son site Internet*.'

703 Ibid., p. 146: '*Compte tenu de l'ordre de grandeur des doses calculées, les conséquences pour la population française pourraient être des pathologies cancéreuses (tumeurs solides et leucémies) et notamment des cancers de la thyroïde. Les niveaux calculés des doses équivalentes à la thyroïde en France, en particulier pour les expositions maximales, justifient une évaluation du risque du cancer de la thyroïde*.'

that, according to the model, the excesses of the estimated cases are inferior or comparable to the uncertainties regarding the estimations on the number of "spontaneous" cancers: thus, these excesses would be hard to detect from an epidemiological point of view. Considering the limits of the indicated method and the uncertainties regarding the risks associated with low doses, the real excess of thyroid cancer, on the level of considered doses, might actually be zero.'[704] With regard to '*les enseignements tirés en France sur la gestion des crises nucléaires*' ('the lessons learned in France on the management of nuclear crises'), the authors stated clearly that their evaluation was not intended to call into question the appropriateness of the actions taken by the French public authorities in 1986. On the contrary, rather than looking back and asking what should and could have been done in the case of Chernobyl, it was more important to ask what should and could be done in the event another important nuclear accident were to happen.[705]

InVS

The InVS also used the 20th anniversary of Chernobyl as an opportunity to communicate its evaluation of the Chernobyl health effects in France to a broader public.[706] For this purpose, it published the pamphlet *Surveillance sanitaire en France en lien avec l'accident de Tchernobyl – Bilan actualisé sur les cancers thyroïdiens et études épidémiologiques en cours en 2006*.[707] Since 2000, the InVS had investigated the possible increase of thyroid cancers in France by compiling a broad range of cancer registers and local and regional epidemiological studies. In its 2006 publication, the InVS presented its results, but it left out the results of the investigations in Corsica insofar as this study had not yet been completed at the time of writing.[708] In this report, the InVS

[704] Ibid., p. 149: '*Ces résultats montrent qui, selon le modèle, les excès de cas estimés sont inférieurs ou comparables aux incertitudes sur les estimations du nombre de cancers «spontanés»: ces excès devraient lors être difficilement détectables d'un point de vue épidémiologique. Compte tenu des limites de la méthode indiquées ci-dessus et des incertitudes sur le risque associé aux faibles doses, l'excès réel de cancers de la thyroïdiens, aux niveaux de dose considérés ici, peut même être nul*.'

[705] Ibid., p. 153: '*Il ne s'agit pas ici de porter un jugement sur ce qui aurait dû être fait en 1986 car, en 20 ans, les conceptions et les pratiques en matière d'évaluation et de gestion des risques pour la santé et pour l'environnement ont significativement évolué. La question se pose davantage dans une vision prospective, face à l'éventualité d'un nouvel accident nucléaire important*.'

[706] This paragraph is an adaptation of the corresponding chapter in: Kalmbach, *Tschernobyl und Frankreich*, pp. 140-141.

[707] InVS (Laurence Chérié-Challine et al.), *Surveillance sanitaire en France en lien avec l'accident de Tchernobyl – Bilan actualisé sur les cancers thyroïdiens et études épidémiologiques en cours en 2006* (Saint-Maurice: InVS, 2006).

[708] The results of the study on Corsica were published in 2012: InVS (L. Pascal, J.L. Lasalle), *Estimation de l'incidence du cancer de la thyroïde en Corse. 1998 – 2006* (Saint-Maurice: InVS, 2012). The study is available online. The English summary on IRSN's website provides the following information: '*In France, Corsica appears to be one of the most exposed regions to the fallout from the Chernobyl accident. Taking into account the scientific knowledge at that time, it was decided to focus studies on thyroid cancers. A study was carried out in order to estimate thyroid cancer incidence in Corsica for the periods 1998-2001 and 2002-2006. The study identified incident thyroid cancer cases between 1998 and 2006 among residents in Corsica. Data were collected using information from the hospitals*

concluded that its further investigations confirmed the preliminary results of its work, which had been published in 2001 and 2003, namely that '*the observed increase in incidences of thyroid cancers is longstanding, important, and continued in time, having started before the Chernobyl accident. […] The lowest rates were observed in the counties of Alsace, which had been the most exposed to the accident's fallout.*'[709] The studies revealed a slight tendency toward an increase in already very rare incidences of thyroid cancer in children. But this observed increase, just as with the general increase in thyroid cancers, was according to the InVS not linked to Chernobyl but rather to an improvement in the registration of these cases over time.[710] However, considering that the causes of thyroid cancer were so little known or understood, the InVS announced it would be investigating this topic further, particularly what possible role ionizing radiation had in the development of these cancers in children.[711] In this regard, the aspect of French self-affectedness figured prominently in the InVS report; though it primarily argued against an increase in thyroid cancers in France because of Chernobyl.

The InVS pamphlet was not limited to providing an evaluation of the health impact in France, it also spoke of the health impact of Chernobyl in the most affected areas of Eastern Europe. It stated that since 1990, there was a veritable epidemic of thyroid cancers in children, but apart from this specific kind of cancer, there was no evidence of significant increases in other cancers in the three most contaminated countries.[712] Thus, the InVS's account of Chernobyl was far from apocalyptic. The way in which the InVS evaluated Chernobyl in this pamphlet can be directly linked back to its position regarding the health impact of low-level radiation. This stance was also clearly forwardly expressed in this report: '*There isn't any epidemiological study that has been able to show that incidences of cancer are linked to low-level exposure.*'[713]

(PMSI) and the local health insurance funds (ALD). Cases were validated through medical records before inclusion in the study. Over the period of study, 342 cases of thyroid cancer, rather women and relatively young patients, were identified in Corsica. Incidence rate of the thyroid cancer was high, but stable among men, and with a slight increase among women, particularly between 2002 and 2006. However, incidence rate and clinical characteristics of thyroid cancer in Corsica are not exceptional and are similar to those in other French districts.' On: http://www.invs.sante.fr/Publications-et-outils/Rapports-et-syntheses/Maladies-chroniques-et-traumatismes/2012/Estimation-de-l-incidence-du-cancer-de-la-thyroide-en-Corse (last accessed: 15 June 2013).

709 InVS, *Surveillance sanitaire en France en lien avec l'accident de Tchernobyl*, p. 65: '*L'augmentation observée de l'incidence des cancers de la thyroïde est ancienne, importante et continue, ayant commencé avant l'accident de Tchernobyl. [...] Les taux les moins élevés étant observés dans les départements d'Alsace qui ont été les plus exposés aux retombées de l'accident*.'

710 Ibid.

711 Ibid., p. 66.

712 Ibid., p. 4: '*En dehors des cancers de la thyroïde, aucune augmentation significative des taux des autres cancers n'a été mise en évidence depuis l'accident dans les trois pays les plus contaminés*.'

713 Ibid., p. 3: '*Aucune étude épidémiologique n'a pu démontrer la survenue de cancers à des faibles niveaux d'exposition*.'

Britain

Health Protection Agency

In 2005, the NRPB became the *Radiation Protection Division* of the *Health Protection Agency* (HPA). Thus, in 2006, the task of communicating on Chernobyl fell to the HPA. However, there are n o publications in Britain that are comparable to those released by the IRSN and the InVS in France.[714] The only publication by HPA released on the occasion of the 20th anniversary is a two-page press release for 25 April entitled *The consequences of the Chernobyl nuclear accident*.[715] The numbers that were presented in this press release were taken from the articles written by Elisabeth Cardis et al. in 1996 and 2006.[716] In order to give a better overview of these numbers, the HPA reproduced the summary table that was used in one of the articles to show the '*Mean cumulative whole body dose,*' the '*Predicted excess number of cancer deaths*,' and the '*Predicted % of cancer deaths due to radiation in the population.*' Aside from the two articles by Cardis et al., the HPA included only two more references: the UNSCEAR report of 2000 and the WHO/Chernobyl Forum report of 2006 (of which Cardis' findings were actually an essential part). Because the text of the press release only consisted of three paragraphs, and given this is one of the very few Chernobyl statements released by the British public authorities after the mid-1990s, it is quoted here in its entirety:

'The 20th anniversary of the Chernobyl accident on 26th April has produced a number of

[714] I do not know if, in 2006, the HPA included information on Chernobyl on its website. Today, the account on Chernobyl provided on the HPA's website is quite short and 'Chernobyl' is not even included as a key word in the topic list, a list which consists of several hundred entries. However, in the brief account on Chernobyl, one quarter of the text is dedicated to '*The impact in the UK*' and provides the following information: '*Chernobyl fallout was first detected in northern Poland on Monday, 28 April, 1986 and soon afterwards across the Baltic Sea in Sweden. The plume then travelled southwards over Germany and up through France to the UK, arriving in southeast England on the morning of Friday, 2 May. The plume had travelled over 1000 miles before reaching the UK and so was considerably dispersed. It was nevertheless very detectable with suitable instruments and there was some widespread 'dry' deposition (i.e., not caused by rainfall). Rainfall in North Wales, NW England and Scotland deposited more fission products on the ground via 'wet' deposition. Iodine-131 was measured in air at about 1or 2 becquerels per cubic metre and could be detected in milk products in these and other regions, but not at levels that would have triggered a ban on consumption. Caesium-137 could also be detected in soil samples and this still has an impact in parts of the UK. In most areas the caesium-137 was washed into the ground where it binds strongly with clay and other soils and is therefore removed from the food chain. However in certain parts of the UK the soil and grasses combine to recycle the caesium-137 and it can then enter the food chain. This occurs in some hill farm areas and has required restrictions on produce from sheep farms in these areas. Measurements were carried out to see how much radiation people had absorbed during, and after, the passage of the plume. In southern UK, people had levels of about 300 becquerels of caesium-137 in their bodies in 1986 which dropped to 50 becquerels in 1989 and then were back to pre-incident levels in 1990. For comparison, adults have about 4,000 becquerels of naturally occurring potassium-40 in their bodies. Potassium is essential for life and potassium-40 emits electrons and a gamma ray with a very similar energy to the gamma ray from caesium-137.*' See: http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/RadiationIncidents/Chernobyl/ (last accessed: 15 June 2013).

[715] Health Protection Agency, *The consequences of the Chernobyl nuclear accident,* in: HPA press releases archive for 2006: http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1253205582795 (last accessed: 15 June 2013).

[716] The studies by Elisabeth Cardis et al. on the health effects of the Chernobyl fallout have formed a central element of the reports of the Chernobyl Forum. Until 2008, Cardis was Head of the Radiation Group at the *International Agency for Research on Cancer* (IARC), the cancer agency of the WHO.

papers, articles and claims about the health effects of the accident both here in the UK and in Eastern Europe. The estimates of the number of health effects caused by radiation exposure from the accident vary widely, from a few thousand to hundreds of thousands of deaths.

Three people died immediately as a result of the accident and a further twenty eight died within a few weeks as a direct result of acute radiation doses(1). They were staff working at the Chernobyl nuclear power station at the time and staff from the emergency services, particularly the fire service. Nineteen more of these emergency workers died during the period 1987 to 2004 from various causes. There is also an increase in the incidence of thyroid cancer in people who were children in 1986, including those in utero at the time of the accident. At present over 4000 cases of thyroid cancer have arisen in Belarus, the Ukraine and parts of Russia, most of which can be attributed to exposure of the thyroid gland by radioactive iodine isotopes from Chernobyl(2). This condition is fatal in only about 1% of cases but it is nevertheless a serious health effect; people affected need to take medication for the rest of their lives.

Predictions of increases in the incidence of cancer in general, and of other illnesses that might have resulted from exposures to radionuclides from Chernobyl, are subject to large uncertainties and can therefore be contentious. These uncertainties are at their greatest when attempting to estimate the number of excess cancer cases attributable to very low radiation doses received by very large numbers of people. A wide range of estimates have been reported in recent weeks using various risk factors and differing methods of calculation. The most reliable recent evidence comes from Elisabeth Cardis and colleagues published in the International Journal of Cancer(3). We reproduce a summary table of their predictions below and the uncertainties inherent in making such predictions are discussed in detail in the paper and in a recent review(4).'

The figure that was presented for the '*Predicted excess numbers of cancer deaths*' for the whole of Europe was 16,000. In relation to other calculations, which were brought forward on the occasion of Chernobyl's 20th anniversary, this number is one among the lower estimates. But what is even more interesting about this press release is the fact that the HPA did not even include a subordinate clause on the topic of Chernobyl fallout in Britain. Thus, self-affectedness was absolutely a non-issue for the British radiation protection authority. With regard to the third narrative element used in this analysis, anti-Eastern European/anti-Soviet stereotypes, nothing can be derived from these few lines. However, another source, the official memoir of the NRPB published by the HPA one year after the 20th anniversary, proves interesting to this end.[717] In this

[717] Mike O'Riordan, *Radiation protection: a memoir of the National Radiological Protection Board* (Didcot: Health Protection Agency, 2007).

institutional history of more than 300 pages, the author dedicated only 3 pages to Chernobyl, praising the '*excellent manner in which the scientific, administrative and public relation aspects of the event had been handled*.'[718] The problems resulting from the fallout in Britain itself did not figure in the account either. However, the author framed the Chernobyl impact in what was unusual and for 2007 quite impressive Cold War rhetoric: '*Although the accident caused thirty deaths among the workers at the site and increased incidents of thyroid cancer among children, considerable disruption of the economy, and much distress in the affected areas, the people of the region were inured to suffering. They, or their parents, had experienced the horrors of collectivisation, famine, purges, invasion and the Gulag system. If there was a positive outcome of the accident, it was at the political level in the USSR*.'[719]

2.3.2 Nuclear power industry

Britain

The British nuclear industry did not take the opportunity offered by the 20th anniversary to communicate on Chernobyl either. There was not one single publication or even a press release by any of the actors in this cluster for this event. Like in France, the British nuclear industry withdrew from the Chernobyl debate after the early 1990s. However, there is one very important difference between these two cases. Whereas in France, in the years leading up to the 20th Chernobyl anniversary, the nuclear industry, in particular Areva, had received substantial political support, the British nuclear power industry had basically been dismantled with the privatization of the British energy sector – a privatization that resulted in the sale of the British nuclear power plants to the British branch of the EDF, *EDF Energy*. Thus, in 2006, the actors of the British nuclear power industry were very much linked to France.

France

EDF

It seems that after its publications on Chernobyl in the late 1980s and early 1990s, the EDF felt it had said everything there was to say on the topic. Similarly to the actors in the British nuclear industry, the EDF's immediate communication revolved around the central statement that an

[718] Ibid., p. 119.
[719] Ibid., p. 120.

accident like Chernobyl could not happen in its own power plants. Any possible links between the activities of the company and the events of Chernobyl were rejected. Therefore, I hypothesize that the EDF did not further communicate on Chernobyl because the company simply did not consider itself part of the Chernobyl debate. The possibility that people could have linked the accident to the EDF's activities in the event it continued to release statements on the accident and participate in the Chernobyl debate was most likely an important factor in the company's decision to refrain from making further statements. This policy to avoid making any potential link between Chernobyl and French nuclear power plants even impacted the festivities of the 20th anniversary of the *Paluel* site. Although the *Paluel* site opened in April 1986, the EDF celebrated its anniversary at the end of 2006 instead of during April 2006 in order to prevent the festivities from becoming a target for anti-nuclear protest on the occasion of the 20th Chernobyl anniversary.[720] The EDF's public relations communication is another instance in which the company has actively distanced its affairs from the accident. The company history on the EDF website does not mention Chernobyl at all. The way in which EDF chose to deal with Chernobyl by refraining from discussing it can be considered the logical consequence of how the events of 1986 were classified, namely as a 'Soviet accident'. The EDF has considered itself to be completely separate from the world in which Chernobyl happened; this world was the past of nuclear energy, and the EDF lay in the future. The company is proud of its technology and openly advertises the source of its generated electricity; it has done so even more openly since the 'greening of the atom' within the frame of the climate change debate – and strongly lobbied for by France[721] – discursively transformed nuclear reactors into mechanisms of nature conservation, if not of world salvation.

Areva

It is very likely that similar reasoning underpins the silence of Areva on the topic of Chernobyl. Neither Areva nor its precursors *Framatome* and *Cogema* published any statements on the accident. However, the way in which Chernobyl was interpreted in the internal context of Areva can be deduced from another source: a book written by Areva's long-term CEO Anne Lauvergeon and her co-worker Michel-Hubert Jamard. Published in 2008, *La troisième révolution énergétique*[722] lies outside the temporal bounds of this study. However, because the account on Chernobyl in this book is quite interesting, and because it is the only Areva-linked statement on Chernobyl that I came

[720] I am thankful to Yves Bouvier for providing me with this information.

[721] See: Emmanuelle Mühlenhöver, *L'environnement en politique étrangère: raisons et illusions. Une analyse de l'argument environnemental dans les diplomaties électronucléaires françaises et américaines* (Paris: L'Harmattan, 2002).

[722] Anne Lauvergeon and Michel-Hubert Jamard, *La troisième révolution énergétique* (Paris: Plon, 2008).

across in my research, I have decided to include it here. The space dedicated to Chernobyl in *La troisième révolution énergétique* is minimal; in fact, the authors dedicated only 4 of 200 pages to the accident. The title of this account, '*A soviet catastrophe*', already provided a clear indication of the direction the argument would take: according to the authors, the accident was caused by the action of the operators and the reactor design. But Lauvergeon and Jamard provided more than just their view on the events of 1986. They also gave an evaluation of Chernobyl's health effects. Here, they primarily referred to the report published by the Chernobyl Forum, stating that it was '*the most profound study that has been conducted so far.*'[723] They went on to state that there would be 4,000 additional deaths because of the accident, asserting that the '*relatively low level of doses received by the inhabitants of the affected areas*' did not substantiate the presence of any links between the radioactive fallout and the increase in still-births, malformations, or the weak health of children in this region.[724] Instead, the reason for this problematic health-related situation was to be found in the people's mental health problems, which were caused by a lack of information and the conviction they had reduced life expectancy – a setting that had been further exacerbated by anti-nuclear campaigners.[725] As well as the narrative elements of anti-Soviet stereotypes and radiophobia, the authors also included an account on French self-affectedness: Epidemiological studies had shown that no correlation could be found between thyroid cancer and Chernobyl in a country like France.[726] Lauvergeon's and Jamard's Chernobyl narrative is well summed up in the metaphor they included in their account: '*In consideration of these facts, it becomes clear that the attempts to make Chernobyl the incarnation of the dangers implied in nuclear energy, is the result of ignorance... or of maliciousness. A little bit like if one were to condemn cars because of a deadly accident that had been provoked by a Trabant the breaks of which were sabotaged and that had been driven at full speed on a mountain road by a driver who was determined to ignore all traffic rules*.'[727]

---

[723] Ibid., p. 132: '*L'étude reconnue comme la plus approfondie à ce jour sur les conséquences de Tchernobyl fur menée sou l'égide des Nations unies vingt ans après l'explosion*.'

[724] Ibid.: '*La relative faiblesse des doses reçues par les habitants des zones touchées n'a pas permis d'établir de corrélation avec le nombre d'enfants mort-nés, de grossesses non menées à terme, de complications à l'accouchement ou avec l'état de santé général des enfants. Le rapport relève aussi l'impossibilité d'établir un lien entre les malformations congénitales signalées dans les zones contaminées et l'exposition aux rayonnements.*'

[725] Ibid. pp. 132: '*En revanche, les experts ont mis en lumière un problème aigu de santé mentale dû au manque d'information donné par les autorités, ce silence ayant amené les populations exposées à se convaincre de la diminution de leur espérance de vie et à s'enfermer dans une attitude passive et ce ne sont pas les propos apocalyptiques des antinucléaires qui peuvent les aider à vivre.*'

[726] Ibid., p. 133: '*De même, des enquêtes épidémiologiques ont démontré l'absence de corrélation entre l'augmentation des cancers de la thyroïde constatée dans un pays comme la France et l'accident de Tchernobyl.*'

[727] Ibid., p. 131: *'A la lumière de ces faits, on comprend que vouloir faire de l'accident de Tchernobyl l'illustration définitive de la dangerosité de l'énergie nucléaire, c'est faire preuve de beaucoup d'ignorance... ou de mauvaise foi. Un peu comme si l'on condamnait l'automobile à la suite d'un carambolage meurtrier provoqué par une Trabant dont on aurait saboté les freins avant de la lancer à pleine vitesse sur un chemin de montagne entre les mains d'un conducteur résolu à ignorer le code de la route.*'

2.3.3 Anti-nuclear groups and other critical voices

France

Greenpeace / Réseau: sortir du nucléaire

Contrary to the strategy of the EDF to distance its company activities from Chernobyl, French anti-nuclear activists were very keen to make that connection between the accident and the French nuclear enterprise. The campaign protesting the construction of the first EPR in France – at the *Flamanville* site in Normandy – emphasized this connection. This project was to be the first of an entire fleet of new nuclear reactors to be built in France; *Flamanville 3* was also intended to be a show piece to market this new reactor particularly after problems in the construction of the first EPR ever to be built had been compromised in Finland and threatened to ruin the reputation of this new reactor design, which was supposed to become the new cash cow of French export. In 2005, the public authorities gave the EPR project in Flamanville, where two reactors already existed, the go-ahead. In April 2006 – the same month of Chernobyl's 20th anniversary – thousands of people gathered to protest the EPR in Cherbourg.

In the years leading up to, including and following 2006, Greenpeace France focused its anti-nuclear campaigns on the EPR. At the same time, this NGO was one of the main promoters of a public commemoration of Chernobyl's 20th anniversary. For the occasion, Greenpeace published a pamphlet[728] and a CD[729] with songs that had been written by various French artists on Chernobyl. Together with *Fnac*, Greenpeace also organized a photo exposition in the Parisian shopping mall *Forum des Halles*, performances of the theatre play *Une autre voix solitaire* (a play based on *La supplication*), and round table discussions.[730]

Réseau: sortir du nucléaire was the other key player to campaign against the EPR project in Flamanville. Contemporaneously to its mobilization for the anti-EPR demonstration in Cherbourg in mid-April, the network prominently raised the issue of Chernobyl. On its website, it published an extensive dossier on Chernobyl, which focused on the accident's impact in France and the *affaire Tchernobyl*.[731] In addition, at the beginning of 2006, the network's spokesperson Stéphane Lhomme

[728] Greenpeace France, *20 ans Tchernobyl* (Paris: Greenpeace France, 2006).

[729] Until 2011, information on this CD as well as a streaming function for all titles was available on Greenpeace's website: http://www.greenpeace.org/france/news/CD-20ans-tchernobyl. See for general information on the CD: http://musique.fnac.com/a1840356/Variete-francaise-20-ans-Tchernobyl-CD-album#ficheDt (last accessed: 15 June 2013).

[730] A website with a list of all Chernobyl-related events which Greenpeace had organized in Paris was available until 2011 on: http://www.greenpeace.org/france/news/expo-tchernobyl.

[731] Until 2011, the website was available at: http://www.sortirdunucleaire.org/index.php?menu=sinformer&sousmenu=themas&souss ousmenu=tcherno3&page=index.

published his book *L'insécurité nucléaire. Bientôt un Tchernobyl en France.*[732] But the Chernobyl anniversary was really just the opportune occasion on which to publish the book and the accident was more of a metaphor than it was the topic of the book.[733] Lhomme was primarily concerned with the risk that a similar accident could happen in France. In his opinion, Chernobyl was everything but a 'Soviet accident': Western nuclear experts had been familiar with the RBMK reactor design, however, they had done everything to dismiss their complicity. Lhomme also pointed out that human failure of plant operators could happen anywhere in the world. His description of the situation in the most affected regions in Eastern Europe heavily drew on the information provided in *La Supplication*. But Lhomme's aim was not to present a detailed account of the health situation of people living in these regions, but to reveal the overarching politics governing the management of these people's daily life. From Lhomme's point of view, these people were being treated like laboratory animals in an immense experiment, the clear aim of which was '*to show that after all, the consequences of Chernobyl, and by deduction any other eventual nuclear accident, were just not that serious*.'[734] In particular, the ETHOS and CORE projects were intended to serve as demonstrations on '*how to live happily in an contaminated area*.'[735] Lhomme in his book identified a clear promoter of this policy: the French *nucléocratie*. According to Lhomme, the French *nucléocratie* was using the contaminated areas around Chernobyl as a training ground to learn and prepare for such eventualities as an accident in a French nuclear power plant. At the international level, this way of managing and at the same time profiting from the situation in the most affected areas in Eastern Europe was made possible by the WHO-IAEA-agreement and the concept of 'radiophobia'.[736] In this regard, French nuclear policies and Chernobyl were tightly entwined in Lhomme's narrative: According to this narrative, the *affaire Tchernobyl* clearly demonstrated the lies and cover-ups the *nucléocratie* propagated regarding the dangers of the nuclear enterprise.[737] At the same time, he pointed out how the *nucléocratie* had held a dominant role in the evaluation and management of the situation in the most affected areas of Eastern Europe.

Thus, for French anti-nuclear activists, the promotion of a public commemoration of Chernobyl on the occasion of the 20th anniversary served two purposes. On the one hand, Chernobyl was presented as a proof that a serious accident could indeed happen and would have devastating

---

732 Stéphane Lhomme, *L'insécurité nucléaire*.

733 For a detailed analysis of Lhomme's book, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 151-155.

734 Lhomme, *L'insécurité nucléaire*, p. 183: '[...] v*isant à ‚démontrer' par tous les moyens que les conséquences de Tchernobyl, et par déduction de toute nouvelle catastrophe nucléaire, ne sont en fin de compte pas si graves que cela*.'

735 Ibid, pp. 185: '*L'après Tchernobyl – ou 'Comment vivre heureux en zone contaminée*.'

736 Ibid., pp. 196.

737 Ibid., p. 205: '*Tout le monde sait bien que l'État français a menti lors du passage du nuage de Tchernobyl sur l'Hexagone.*'

consequences. On the other hand, by connecting the management of the post-accident situation in France and in Eastern Europe to the power structures in the French nuclear techno-political regime, the activists used Chernobyl as the demonstration of the inherent inhumanity of French nuclear policies. Activists felt that there was an urgent need to unveil the real implications these policies had for the future of France, if not the rest of the world. After all, the French nuclear industry was about to reap the benefits of its international lobbying efforts of 'greening the atom' and was preparing to sell the new EPR to the rest of the world. Therefore, within the context of the launch of the new build project of the EPR in Flamanville, the 20th anniversary of Chernobyl proved to be the ideal means with which the activists could catch and draw the attention of the wider public to their cause. To this purpose, the image of the clean and green energy of the future – which was the embodiment of the EPR marketing campaign – was placed in contrast with the apocalyptic scenery of the situation in the most affected regions of Eastern Europe. The aim of bringing this divers imagery together was to show that nuclear power was anything but a benign technology. The activists wanted people to think twice about whether they truly found it acceptable to be surrounded by 58 nuclear plants in their country and whether they really supported a policy that pushed for worldwide nuclear expansion.

CRIIRAD

The CRIIRAD also instrumentalized the 20th anniversary of the accident to call attention to its cause, i.e. calling to account the people who had covered up the true impact of the Chernobyl fallout in France.[738] In early April, the CRIIRAD released *Tchernobyl – 20 ans après, les services officiels français persistent dans la censure et la désinformation*[739] and made this communiqué available on its website. The central argument of the publication was its criticism of the IRSN: the successor of the SCPRI still would not admit that the data published in 1986 had been falsified. What was even worse was that the same people who had lied to the French public 20 years ago were still in charge and that the same mind-set that had made these lies possible still persisted. '*In the event of a new accident should occur, one thing is certain: there won't be a single discordant voice inside the official expert institution, everybody will speak with one voice... and this voice will have the same intonations as in 1986!*'[740] The extent to which the *affaire Tchernobyl*, even 20 years later, was still

[738] This paragraph is an adaption of: Kalmbach, *Tschernobyl und Frankreich*, p. 150.

[739] CRIIRAD, *Tchernobyl – 20 ans après, les services officiels français persistent dans la censure et la désinformation* (Valence: CRIIRAD, 2006).

[740] Ibid., p. 2: '*En cas de nouvel accident, une chose est sûre, il n'y aura pas une seule voix discordante au sein de l'institut officiel d'expertise, tout le monde parlera d'une seule voix... et elle aura les mêmes intonations qu'en 1986!*'

considered an ongoing struggle between the very same actors that were present in 1986 is well illustrated by a round table discussion that the CRIIRAD had attempted to plan for 25 April 2006: Bella and Roger Belbéoch, as well as Roland Desbordes and Corinne Castanier of the CRIIRAD were supposed to confront Philippe Renaud, Georges Charpak, André Aurengo and André-Claude Lacoste.[741] To be sure, the commitment that the CRIIRAD had to Chernobyl was not limited to resolving the issue inherent to the *affaire Tchernobyl* and ensuring that compensations for health effects of the fallout in France were allocated. The organization also actively supported Eastern European Chernobyl activists, in particular Yuri Bandazhevsky (chapter 3.1.2).

'*Caen-Group*'

Chernobyl's 20th anniversary was not only used as a tool in explicit anti-nuclear campaigns or to further the claims of pro- and anti-nuclear proponents in the struggle connected to the *affaire Tchernobyl*. Advocates who challenged the official evaluations of the situation in the most affected areas in Eastern Europe also used the anniversary to increase awareness for their cause.[742] To this end, Frédérick Lemarchand and Guillaume Grandazzi published a revised and expanded edition of *Les silences de Tchernobyl*.[743] This time around, Galia Ackerman – who had translated *La Supplication* to French and lobbied for a French edition of the book – joined the team of editors. In addition to this joint publication, the editors also pursued individual projects in 2006. Galia Ackerman published her own book *Tchernobyl, retour sur un désastre*[744] and wrote a foreword to the French edition of Igor Kostin's photography book on Chernobyl.[745] Guillaume Grandazzi, in turn, wrote an article for *Osteuropa*,[746] and Frédérick Lemarchand, together with others, edited a topic issue for the journal *Écologie & Politique*.[747] Among this group of editors was Jean-Pierre Dupuy – philosopher of science and author of the book *Pour un catastrophisme éclairé*[748] who had come in closer contact with the topic of Chernobyl through his visit to the most affected areas where he had joined Grandazzi and Lemarchand. Dupuy published a book on Chernobyl on the

[741] This debate was announced on CRIIRAD's website, however, as far as I know, never materialized.
[742] All the books mentioned subsequently are discussed in more detail in: Kalmbach, *Tschernobyl und Frankreich*, p. 144-148.
[743] Galia Ackerman, Guillaume Grandazzi, Frédérick Lemarchand (eds.), *Les silences de Tchernobyl. L'avenir contaminé* (Paris: Éditions Autrement, 2006).
[744] Galia Ackerman, *Tchernobyl, retour sur un désastre* (Paris: Buchet/Chastel, 2006).
[745] Igor Kostine (avec la collaboration de Thomas Johnson), *Tchernobyl: confessions d'un reporter* (Paris: Éditions des Arènes, 2006).
[746] Guillaume Grandazzi, "Die Zukunft erinnern – Gedenken an Tschernobyl," in *Tschernobyl: Vermächtnis und Verpflichtung*, ed. by Sahm/Sapper/Weichsel, p. 7-18.
[747] Frédérick Lemarchand, et al. (eds.), *Destination Tchernobyl* (Paris: Éditions Syllepse, 2006; Écologie & Politique 32/2006).
[748] Dupuy, *Pour un catastrophisme éclairé*.

occasion of the 20th anniversary as well: *Retour de Tchernobyl: journal d'un homme en colère.*[749]

The commonality of all of these publications lay in their emphasis on the devastating consequences the accident had had and would continue to have for the people living in the most contaminated areas in Eastern Europe. At the same time, the authors vehemently criticized international attempts to cut any connection between the health situation and the radio-hygienic situation of the area and to dump the individuals of the contaminated areas with the responsibility of dealing with the consequences of the disaster themselves. Already the sheer number of publications that originated from the sphere of the 'Caen-Group' ensured that their narrative of Chernobyl would profoundly shape the media reporting on the 20th anniversary. Interviews with the authors were printed and broadcasted, their books were reviewed and figured prominently in the reading recommendations, and Galia Ackerman – translator and journalist as aforementioned – ensured the broad and very critical coverage of Chernobyl on *Radio France Inter*.

Britain

Undoubtedly, there were also people in Britain who, on the occasion of the 20th anniversary, raised criticism of the evaluation and management of the impact of Chernobyl. Their criticism was particularly directed towards the official reports published by the IAEA and WHO in late 2005 regarding the environmental effects and healths impact of the accident. In response to these reports, MEP Rebecca Harms had commissioned a study to look into the scientific basis of their evaluations, which was published in 2006 and became widely known as the *TORCH*-report (The Other Report on Chernobyl).[750] Although the authors, Ian Fairlie and David Summer, are both British scientists, the report has never truly been perceived as a British publication, least of all in the UK. This is very likely due to the fact that a wider British debate on Chernobyl during the 20th anniversary never materialized. The few British activists who took part in the transnational Chernobyl debate did not work together to create a 'concerted effort' at a national level, as did the French Chernobyl activists. The French activists received far more public attention due to the strong perception of self-affectedness, which had become a pressing political issue within the context of the EPR new build project. This public interest in turn generated enough interest on the part of publishing houses, the editorial offices of journals and newspapers, and broadcast television for them to cover this topic as well. In Britain, however, the issue of nuclear energy policies had almost totally disappeared from the public discourse for years: for instance, the government's 2003 *Energy White Paper* had not

[749] Jean-Pierre Dupuy, *Retour de Tchernobyl: journal d'un homme en colère* (Paris: Éditions du Seuil, 2006).

[750] Ian Fairlie and David Summer, *The Other Report on Chernobyl (TORCH)* (Berlin/Brussels/Kiev: Greens and EFA in the European Parliament, 2006).

even included nuclear energy in its considerations. Yet, 2006 was the year that brought nuclear energy back on the agenda: Tony Blair's *Energy Review*, which was launched in January 2006, embraced the many voices that had lobbied to revive the British nuclear enterprise. Many of these voices had argued that nuclear power would be the perfect solution to reduce CO2-emissions and to reach the ambitious aims that the British government had set for itself in this regard in the fight on climate change. This turnabout of the Labour government with regard to its nuclear policies was consolidated in the years to come: in 2007, the EDF publicly expressed its willingness to be the operator of the eventual new build reactors,[751] and – after intensive debates on the costs of the new build project and the legitimacy guaranteeing the EDF a fixed price per kW/h[752] – the government gave its approval in March 2013 for *Hinkley Point C*. Interestingly, in the criticisms that Greenpeace UK raised against this decision, the economic argument was present first and foremost: '*Hinkley C fails every test – economic, consumer, and environmental. It will lock a generation of consumers into higher energy bills, via a strike price that's understood to be nearly double the current price of electricity, and it will distort energy policy by displacing newer, cleaner, technologies that are dropping dramatically in price.*'[753]

But in 2006, this was all still very much perceived as the government's dreams for the future. As many of my interview partners stated, at this point in time nobody believed that the government would be successful in pursuing this goal. Thus, in 2006, from the British anti-nuclear power perspective – which comprised only a very few people to begin with – there was no reason why the debate on the 'true' impact of Chernobyl ought to be transformed into a proxy war in the fight against national nuclear policies as had occurred in France. By 2006, Chernobyl had been entirely discursively distanced and separated from British nuclear policies. However, the fact that on the occasion of the 20th anniversary some newspapers included the question of self-affectedness in their reporting might be directly linked to this change in nuclear policies since it brought the newsworthy question of the risks connected with nuclear power plants back on the agenda. Yet, in order to obtain statements on British self-affectedness, journalists basically had to turn to one individual campaigner: Chris Busby.

---

751 See for this declaration the EDF's press release of 23 May 2007: http://medias.edf.com/communiques-de-presse/tous-les-communiques-de-presse/communiques-2007/edf-apporte-son-experience-et-ses-competences-nucleaires-aux-britanniques-40311.html&return=54%2526page%253D2%2526searchMonth%253DMai%2526searchYear%253D2007%2526search%253D1 (last accessed: 15 June 2013).

752 The Sussex Energy Group is one of the most fierce critics of the government's plans. See in this regard: Sussex Energy Group, *Response to Government's "The Future of Nuclear Power" consultation* (Sussex, 2007): https://www.sussex.ac.uk/webteam/gateway/file.php?name=seg-spru-nuclear-response.pdf&site=264 (last accessed: 15 June 2013).

753 Greenpeace UK, *Hinkley strike price briefing*: http://www.greenpeace.org.uk/hinkley-strike-price-briefing (last accessed: 15 June 2013).

2.3.4 Individual voices

Britain

Chris Busby

Although Chris Busby's contribution to the Chernobyl debate on the occasion of the 20th anniversary was a cooperative project, it will be discussed all the same as an 'individual voice'. The reason for such a decision lies in the fact that although from a transnational perspective is was very much a cooperative project, from the British perspective it was very much an individual project insofar as Busby's partners were completely external to the British nuclear discourse. In 2006, Busby together with his colleague Alexey Yablokov edited the book *Chernobyl 20 years on.*[754] This compendium of articles was published, on behalf of the *European Committee on Radiation Risk* (ECRR),[755] by Busby's own environmental consultancy firm *Green Audit*. The book consisted of a collection of articles that investigated various aspects of the Chernobyl health effects. The articles were mostly written by Eastern European scientists. According to the editors, the studies included in this book had been deliberately ignored by Western radiation experts because they openly contradicted the 'official narrative' of Chernobyl's health impact, a narrative which was endorsed by the UNSCEAR and the WHO. But the objective of this book was not just to provide a forum to a Chernobyl counter narrative. The aim was to present evidence that the models for risk evaluation of radiation exposure – that had been developed by the *International Commission on Radiological Protection* (ICRP) and were based mainly on studies on Hiroshima and Nagasaki survivors – were erroneous. This claim employed a rational that went far beyond the case of Chernobyl, and nuclear accidents. It called into question the risk assessment of nuclear power plants in general – again, not because of the fear of what could happen in the event of an accident, but because of the radioactive emissions that were a result of the normal operations of nuclear power plants. Hence, although this publication addressed the Chernobyl accident, its primary topic was to call attention to the need for a fundamental review of the risks associated with nuclear power in general. The editors clearly explained the role Chernobyl held in their argument: '*The Chernobyl accident and its appalling*

[754] Chris Busby and Alexey Yablokov (eds.), *Chernobyl 20 years on: health effects of the Chernobyl accident* (Aberystwyth: Published on behalf of the ECRR by Green Audit, 2006).

[755] The ECRR is a working group that was initiated 1997 by the Green Group of the European Parliament in the context of the adaption of a Council Directive on radioactive waste management. Chris Busby, a driving force of this initiative, served as the Scientific Secretary to this group. In 2003, Inge Schmitz-Feuerhake became the Chair of the Scientific Committee of the ECRR. Schmitz-Feuerhake, a retired Professor of experimental physics of the University of Bremen, is a founding member of the *Gesellschaft für Strahlenschutz* and became known in Germany because of her leukaemia cluster study in the Elbmarschen region. This study was intended to ascertain whether the nuclear power plant Krümmel had caused cancer in children in the area surrounding the plant.

outcomes have given the human race the empirical evidence to test this theory [the ICRP model].'[756] And they also openly addressed the wider political implications of their assessment: '*This book represents a landmark on the road to understanding the effects of low-dose chronic irradiation. The committee believes that these lessons should be borne in mind by policy makers who are, even now, discussing new investments in nuclear energy and ways in which historic and future radionuclide waste can be disposed of into the environment. The committee recommends this book to scientists and policymakers and concerned members of the public in the hope that the huge amount of work carried out by scientists publishing their results in Russian language journals and others studying the effects of the Chernobyl accident will influence their decisions in this important area of public health*.'[757] This quote is especially interesting because of its clear reference to the historical context in which this book was published: '*policy makers who are, even now, discussing new investments in nuclear energy'*, or rather Tony Blair's government, amongst others. Thus, Busby, very much like anti-nuclear activists in France, used Chernobyl as an instrument to counter national nuclear policies and to influence public opinion with his evaluation of the accident.

The articles included in the compendium intended to leave no doubt in the reader's mind that Chernobyl had generated an apocalypse. The radioactivity released by the accident had caused changes in the genomes of '*all species, plants and animals and humans*.'[758] The effects of these changes were the topic of the various articles compiled in this book. For example, Krysanov wrote about the higher radiosensitivity of mice that had been living in the high irradiation zone for generations; Yablokov contributed an article on the health status (or rather sickness status) of the 'liquidators'; and the Nesterenkos elaborated on the various illnesses found in children and adults in the most affected areas of Belarus that they had been studying for years. But the apocalyptic narrative of this collection of reports most obviously surfaced in Rosalie Bertell's article on '*The death toll of the Chernobyl accident*'. Bertell, one of North America's most prominent anti-nuclear campaigners, proclaimed that a conservative estimation hovered between '*899,600 to 1,787,000 in total*.'[759]

The fact that this book – published by a British anti-nuclear campaigner in close cooperation with a Russian colleague – included papers by the Nesterenkos, Inge Schmitz-Feuerhake, and Rosalie Bertell and directly addressed the health effects of Chernobyl from a global perspective, reveals the degree to which the Chernobyl debate had become transnationally entangled by 2006. This well connected transnational counter expertise on Chernobyl was now taken by Busby to

[756] Busby/Yablokov, *Chernobyl 20 years on*, p. 3.
[757] Ibid.
[758] Ibid., p. 2.
[759] Ibid., p. 247.

underpin his claim that a re-evaluation of low-dose radiation effects was necessary. This was supposed to be the starting point for what he hoped would become a more generalized campaign against the nuclear turn the British government had just taken.

The way in which these two debates were connected becomes most visible in Busby's own contribution to this group of articles in which British self-affectedness formed an integral part of his argument. In his article on '*Infant leukaemia in Europe after Chernobyl and its significance for radioprotection: a meta-analysis of three countries including new data from the UK*', Busby argued that '*infant leukaemia rates had been increased following exposure in utero to radiation from the Chernobyl accident fallout in the UK*.'[760] But the point he wished to make with his finding was less about Chernobyl's impact in Britain as such. For Busby, British health effects from Chernobyl were just one steppingstone among many in a general argument built around the health impact of nuclear power plants during their normal, accident-free operation. His line of argument intended to prove that the low-level radiation people had been exposed to because of the Chernobyl fallout had led to serious health effects, and this, at the same time, implied that nuclear plants in general caused cancer in the people living near them. According to Busby, these health effects had already been proven by the child leukaemia cluster that was verified around Sellafield.[761] Therefore, for him, there was only one possible conclusion: '*In the case of the Chernobyl infant leukemias there is no alternative explanation apart from internal radiation exposure to largely the same isotopes as the nuclear site leukaemias. The significance of this result for radio protection is overwhelming*.'[762] In this regard, Busby used the research on the impact Chernobyl had in Britain as a means to a very specific end: the end of electricity generation through nuclear power. And, in this regard – like in his earlier publications – the health effects of Chernobyl in Britain served as an illustration of the impact of the global nuclear enterprise.

This is an interesting difference when compared to the focus on which the French Chernobyl debate was based. In France, the Chernobyl fallout has been perceived as something dangerous as such and has not necessarily been put into relation with the national nuclear enterprise. This constellation was a result of the prominent role attributed to French self-affectedness in the debate on Chernobyl's impact. In Britain, however, the Chernobyl fallout was used by activists like Busby as a means to expose the dangers of British nuclear installations. In this regard, investigations into

[760] Busby and Yablokov, *Chernobyl 20 years on*, p. 136.

[761] These kinds of cluster studies, which investigate the health situation of children living near nuclear installations, have been conducted in various countries. Normally, they are initiated by anti-nuclear groups and also, normally, find an 'abnormal level' of specific illnesses in the children; all of these studies and their applied methodologies are highly contested and, especially pro-nuclear scientists, consider the connection between these illnesses and the nuclear plants, which these studies claim to prove, to be untenable.

[762] Busby and Yablokov, *Chernobyl 20 years on*, p. 142.

the health effects of Chernobyl fallout in Britain aimed to underpin arguments brought against the British and global nuclear industry and did not focus on individual compensation. Thus, it is possible to detect a distinct difference in the way in which the argument 'Chernobyl' is used in the two national contexts: in France, the notion 'Chernobyl' is attached to the criticism of the secrecy policies of the French *nucléocratie*, whereas in Britain it is associated with the health impacts of the British nuclear installations and the global nuclear enterprise.

France

In Britain, the 20th anniversary of Chernobyl was basically a non-issue. But in France, the numerous monographs on Chernobyl that were published in 2006 mirror the high level of attention that was dedicated to the accident from the diverse perspectives – among which the various publishing houses that made these publications possible. Public authorities, anti-nuclear groups, and people concerned with the health situation in the most affected areas of Eastern Europe were not the only ones to use the anniversary to disseminate their interpretations and narratives of the accident, various individual voices did so as well.[763] Among them was one actor whose work and activities have been already discussed in the previous chapter: Jean-Michel Jacquemin. In 2006, he released his new book *Tchernobyl: Aujourd'hui les Français malades*.[764] This 400-page book was basically a synthesis of his earlier publications. It placed the emphasis on the devastating health effects of Chernobyl in France and the continued official cover-up of the true impact. In addition to his monograph, Jacquemin also contributed an article to the new edition of *Les silences de Tchernobyl*.[765] But Jacquemin was not the only individual voice that used the occasion of the 20th anniversary of Chernobyl to come up with a narrative of the accident's impact; other new individual actors sprung up as well. For instance, Chantal Montellier wrote and illustrated a graphic novel on Chernobyl that not only addressed the question of the health effects in Eastern Europe, but also broached the topic of the *affaire Tchernobyl*.[766] Raymond Micoulaut used the 20th anniversary to publish a book on the secrecy policies that surrounded the crisis management of the Chernobyl accident, in France as well as in the Soviet Union.[767] Moreover, for the Chernobyl activists from

[763] Because the analysis of the French publications released for the 20th anniversary forms a central part of my book *Tschernobyl und Frankreich*, I keep this account here rather short.

[764] Jean-Michel Jacquemin-Raffestin, *Tchernobyl 20 ans après. Cachez ce nuage que je ne saurais voir* (Paris: Guy Trédaniel Éditeur, 2006).

[765] For a more detailed analysis of Jacquemin's 2006 publications, see: Kalmbach, *Tschernobyl und Frankreich*, 156-158.

[766] Chantal Montellier, *Tchernobyl mon amour* (Arles: Actes Sud BD, 2006). For an analysis of the graphic novel, see: Kalmbach, *Tschernobyl und Frankreich*, 165-166.

[767] Raymond Micoulaut, *Tchernobyl. L'histoire d'une désinformation* (Paris: L'Harmattan, 2006). For an analysis of the book, see: Kalmbach, *Tschernobyl und Frankreich*, 162-163.

Eastern Europe, like Igor Kostin[768] and Juri Bandazhevky,[769] the anniversary served as an occasion to publish their accounts on the accident and its impact in French. The anniversary was also a convenient occasion on which to publish books on the nuclear enterprise in general. Thus, it is no coincidence that Jean-Philippe Desbordes' book *Atomic Park. À la recherche des victimes du nucléaire*[770] and the French translation of Günther Anders' classic *Die atomare Bedrohung*[771] appeared in 2006. This variety and quantity of nuclear-related publications that appeared in 2006 clearly shows Chernobyl's central role in the French nuclear discourse.

2.3.5 Chernobyl solidarity movement groups

France

In France, the solidarity movement groups that organize recreational stays for children from the most affected areas in Eastern Europe were almost invisible in 2006. They did not publish anything on their work, nor did the media dedicate much space in their reports on their activities. However, the Chernobyl interpretations of two founding members of the ETB, Galia Ackerman and Wladimir Tchertkoff, figured prominently in news reports. In conformity to the work and stance of the ETB, the publications did not discuss the recreational stays of Eastern European children in France. Instead, Ackerman and Tchertkoff used the opportunity provided by the 20th anniversary to increase awareness of the health and living conditions of the people in the most affected areas of Eastern Europe. In addition, Tchertkoff's book *Le crime de Tchernobyl. Le goulag nucléaire*[772] included a detailed account on the wider nuclear politics that were at stake in the cover-up of the 'true' health impact of Chernobyl. From Tchertkoff's point of view, the CORE and ETHOS programmes essentially barred the formation of any criticisms of the evaluation policies and in particular hindered any challenges to the concept of 'radiophobia' from forming. The author asserted that it was, therefore, important to support people like Nesterenko and Bandazhevsky who opposed these policies. In this regard, Ackerman's and Tchertkoff's publications conformed to the goals of the ETB. This stance was located wholly within the political sphere, a setting that differed quite

[768] Igor Kostine (avec la collaboration de Thomas Johnson), *Tchernobyl confessions d'un reporter Tchernobyl* (Paris: Editions des Arènes, 2006). For an analysis of the book, see: Kalmbach, *Tschernobyl und Frankreich*, 159-161.
[769] Youri I. Bandazhevsky, *La philosophie de ma vie: journal de prison* (Paris: Jean-Claude Gawsewitch Éditeur, 2006). Bandazhevsky's work is discussed in more detail in chapter 3.1.2.
[770] Jean-Philippe Desbordes, *Atomic Park. À la recherche des victimes du nucléaire* (Arles: Actes Sud, 2006). For a short analysis of the book, see: Kalmbach, *Tschernobyl und Frankreich*, p. 161.
[771] Günther Anders (traduit de l'allemand par Christophe David), *La menace nucléaire: considérations radicales sur l'âge atomique* (Monaco: Le Serpent à plumes, 2006).
[772] Wladimir Tchertkoff, *Le crime de Tchernobyl. Le goulag nucléaire* (Arles: Actes Sud, 2006).

drastically from the one in which British solidarity movement exponents communicated in 2006 about their work.

Britain

As aforementioned, very few British publications on Chernobyl were released on the occasion of the 20th anniversary of the accident. This setting reflects the minor role that Chernobyl has played in the British nuclear discourse. However, the few publications that came out in 2006 represent well the main actors of the British Chernobyl debate since the mid-1990s. Alongside Chris Busby, a central figure of the British solidarity movement also published work on Chernobyl: Linda Walker, the head of the UK branch of Adi Roche's CCP. Her book *Living with Chernobyl. The after effects of a nuclear disaster. Ira's story*[773] appeared in the book series '*Real life stories*' besides other titles like '*Refugee camps*', '*Street children*' and '*Aids orphans*'. The book presented the life story of Ira, a 'Chernobyl child' living in a Belarusian orphanage. This narrative hardly provided any direct criticism of the nuclear enterprise. In terms of statements on wider implications of Chernobyl, the book – on the very last page – quoted scientists from the Ukrainian Ministry of Health that '*The Chernobyl radiation accident is undoubtedly the greatest environmental catastrophe in the history of mankind.*'[774] In the following sentence – the last sentence of the book – Linda Walker added: '*The world must never forget the children of Chernobyl, the generation yet to come and the terrible events of Saturday, 26 April, 1986.*'[775] But apart from its concluding statement, the book spoke almost exclusively of the life story of Ira and her daily life and friends in the orphanage. The accident as such was barely even mentioned and even less so the (nuclear) political questions connected to its impact. In this regard, for instance, the author did not question the fact that the accident had rarely been discussed with the children in the orphanage, instead she presented this setting as a given: '*Millions of people from Belarus, the Ukraine and parts of Russia, live with the consequences of the Chernobyl disaster every day of their lives. At places such as Zhuravichi and Rechitsa [names of orphanages] however, the accident and its effects are rarely discussed. The staff feel that the children have enough to worry about coping with their disabilities and coming to terms with what difficult future is ahead of them*'.[776] Regarding statements on the health impact of Chernobyl, Walker's account was very reserved and did not provide any numbers at all, not even estimated ranges. Instead, she said: '*The number of casualties therefore remains controversial, but*

[773] Linda Walker, *Living with Chernobyl : Ira's story* (Tunbridge Wells: Ticktock Media, 2005).
[774] Ibid., p. 45.
[775] Ibid.
[776] Ibid., p. 30.

experts now agree that the Chernobyl disaster caused many cancers and, in particular, thyroid cancer. The full medical impact of Chernobyl will not be known until at least 2012.'[777]

It is not possible to say whether such careful formulations regarding the health impact of Chernobyl or the absence of open allusions to nuclear politics – specifically regarding the contestation of the official evaluations on the health situation in the most affected areas – were a condition dictated by the publishing house or whether they originated from the author herself. In any case, the exclusion of these topics from the narrative has resulted in an almost exclusive focus on the individual. As a result, the daily life of Ira was presented as something that was detached from Chernobyl. Of course, at one point there had been a connection, but this connection was an event of the past. In this regard, the short description on the back of the book, where the content was summed up, is of interest: '*Ira was born with severe disabilities two years after the Chernobyl disaster. She was given away to a home for abandoned babies and spent the next 11 years lying in a cot with nothing to do. But Ira has a huge strength of character – all she needed was to be given a chance*.'[778] This statement was a declaration of the perspective the narrative would take; it was turned toward Ira's future and this future was detached from her past. In so doing, the narrative effectively severed any connections her story had with nuclear questions. By placing the emphasis on the personal character of the children – this also occurred with Igor, who was discussed in the previous chapter – it was possible to insinuate that the real scandal in their life was their living conditions in the Eastern European orphanages, which did not allow their capabilities and talents to develop. When this type of narrative is placed alongside the one presented, for instance, in Tchertkoff's *Le crime de Tchernobyl. Le goulag nucléaire*, it becomes even more obvious how apolitical (with regard to nuclear politics) the publications of British solidarity movement exponents are in comparison to those of their French counterparts.

In this regard, the book on Ira underpins my argument that the focus that British solidarity movement groups placed on the personal stories of the 'Chernobyl children' actually separated the topic of 'Chernobyl' from the nuclear discourse. This detachment clearly facilitated these groups with their fundraising activities and could explain why the solidarity movement grew as strong as it did in the UK, first and foremost with regard to the number of children that were hosted for recreation holidays. At the same time, this detachment from nuclear questions promoted a *denuclearization*[779] of the topic of Chernobyl in the British discourse. Additionally, this detachment actively worked against the perception of self-affectedness; this is especially true in the case in

[777] Ibid., p. 44.
[778] Ibid., back of the book.
[779] The *denuclearization* of Chernobyl's consequences is an essential part of Chernobyl politics in Eastern Europe. See in this regard: Bauer/Kalmbach/Kasperski, *From Pripyat to Paris*. The term *denuclearization* refers to Gabrielle Hecht's considerations in: Hecht, *Nuclear Ontologies*.

which the details of the horrible living conditions in the Eastern European orphanages were juxtaposed with descriptions of the fluffy toys and the overloaded aid convoys that left from the UK.

2.3.6 Conclusion and outlook on the post-2006 period

In France, the various actors of the lively French Chernobyl debate used the opportunity offered by the 20th anniversary to communicate their statements on the impact of the accident to a broad public. This date was a particularly convenient opportunity for anti-nuclear activists to foster a debate on the use of nuclear energy in general. From their standpoint, this had become especially necessary due to French national and international attempts to expand and advance the nuclear enterprise. Pro-nuclear French public authorities, on the other side, used the occasion to lobby in favour of their evaluation of the accident's impact, which did not call into question the nuclear enterprise as such. The French efforts to 'green the atom' – i.e. to present it as a sustainable environmentally friendly form of energy – and the plans to build the new EPR in Flamanville must be considered the decisive elements of the historical context within which the selective French Chernobyl debate was contained in 2006. In Britain, the Chernobyl debate never reached any where near the same level of importance that it had in France. From the mid-1990s onwards, Chernobyl had basically disappeared from the British nuclear discourse and only lived on in relation to charity activities. However, when the British government decided in 2006 to pave the way for a return to nuclear via nuclear new build, the topic of the health effects from the fallout slightly re-surfaced in several newspaper articles and in the work of anti-nuclear activist Chris Busby, who used the occasion of the anniversary to challenge national nuclear policies as had anti-nuclear activists in France. Yet, in the case of France, a broad coalition of actors challenged the official narratives of Chernobyl, whereas in Britain, only a handful of people in 2006 publicly engaged in the Chernobyl debate. At the same time, the activities of the solidarity movement groups dominated the British media reporting. In contrast, the activities of French solidarity movement groups were hardly reported on at all by the French media, which focused on the health effects of Chernobyl: in Eastern Europe as well as in France.

The different objects upon which the emphasis was placed in the two national contexts in 2006 reflect well the general ways in which Chernobyl has been debated differenly in France and in Britain. In France, Chernobyl has become an anti-nuclear and anti-*nucléocratie* argument. In conformity with this tendency, the 20th anniversary generated a lot of attention and on the part of

anti-nuclear activists Chernobyl was turned into a case against the government's EPR policies. At the same time, the occasion of the anniversary was used to challenge the official international assessments regarding the accident's impact – to which the public authorities responded by arguing in favour of this official assessment. In Britain, however, Chernobyl did not embody a specific meaning with regard to national nuclear politics; this is also why British public authorities saw no need to communicate anything on Chernobyl in 2006. From the mid-1990s onwards, Chernobyl has been perceived as an event that only impacted people – and mostly children – in Eastern Europe. Because of this perception, Chernobyl could not be mobilized as an argument against British nuclear new build in 2006. The fact that the argument just simply did not work in the British context is well reflected in the feedback Busby received: by insisting that there had been discernable Chernobyl health effects in Britain only succeeded in further excluding him from the British nuclear debate because his positions were widely considered to be absurd.

Given this setting, it is interesting to have a look at the British debate on nuclear new build in the years following 2006: the 'anti-nuclear' argument that has dominated the debate has not regarded the question of possible health effects but it has revolved around the question of money. People have wondered whether this investment of tax money to subsidize a guaranteed price per kW/h for the operators will pay off in the end. Thus, whereas in France, the nuclear question has over the years been 'taken back to the streets' and has been debated through such various popular instruments as manifestations, rallies, blocking castor transports, and the occupation of nuclear power plants, in Britain the arguments against nuclear new build have been brought forward mainly by economists and political scientists in editorial articles and academic papers – that is, with the noteworthy exception of Scotland. In recent years, the Scottish nuclear discourse must be considered as a separate entity to the British nuclear discourse. Since its election to power in 2007, the current Scottish government has opposed Westminster's new build plans and has categorically refused to allow any new build projects to be implemented on Scottish soil. The Scottish government was backed in its position by the Scottish parliament, which re-formed following a referendum in 1997.[780] Thus, when discussing the 'British' position in the following paragraphs, it is to be understood that I refer to a 'Britain' that predominantly represents the stance of the government in London.

In France, Chernobyl can be well integrated into the country's current anti-nuclear discourse seeing as its memory inherently implies criticism of the French *nucléocratie*, and – due to the strongly perceived self-affectedness – there is a large audience for health-related nuclear arguments.

[780] For the parliament's decision, see: The Scotsman, *MSPs vote No to nuclear stations*, 17 January 2008: http://www.scotsman.com/news/politics/top-stories/msps-vote-no-to-new-nuclear-stations-1-1074436 (last accessed: 15 June 2013).

In Britain, however, the argument on health effects of low-level radiation exposure and that of an oppressive *Atomstaat* ('atom state', in reference to Robert Jungk's homonymous book) – both mounted in relation to the civil nuclear enterprise – are the arguments of a very small group of people and thus Chernobyl as an anti-nuclear argument, is quite an 'outsider argument'. In addition, the already very small group of anti-nuclear power plant activists in Britain has shrunk even more in recent years. As climate change came on the agenda and became the new buzz word, George Monbiot (among others) – claiming that this challenge necessitated a reconsideration of questions related to anti-nuclear positions – left the British anti-nuclear movement to become one of Britain's most prominent advocates of nuclear new build. A strong believer in the narrative of the 'green atom', Monbiot now considers the anti-nuclear movement to be an enemy. This shift on the part of environmentalists from the anti- to the pro-nuclear side has also been verified in other countries than Britain. But it seems that in Britain the 'pro-nuclear environmentalists' dominate the nuclear-discourse at the moment. This might explain why, regardless of the internationally supported re-emergence of the Chernobyl debate, the 20th anniversary was unable to spark a broader debate on British Chernobyl self-affectedness or mobilize a larger group of people to campaign against the renaissance of the British nuclear enterprise. Britain seems to lack a driving force capable of turning events such as the attempt by the British government to manipulate media reporting on Fukushima – as Rob Edwards revealed in *The Guardian* in July 2011 – into a more widely backed argument against national nuclear policies. In other countries, this driving force consists, inter alia, of environmental groups. In Britain, however, this important actor seems to have in some ways refrained from joining the nuclear discourse, and, as it has been shown above, it has never tried to have a prominent role in the British Chernobyl debate.

This is not so say that an anti-nuclear discourse has not existed in Britain in recent years, but in comparison to many other Western European countries such as France, Germany, or Italy it has remained a marginal topic within the political discourse. Moreover, Chernobyl never became a central argument to the British anti-nuclear discourse, and the primary focus has ever remained the Sellafield-Windscale complex. Interestingly, this continuity has also shaped the way in which meaning is assigned to Chernobyl. When Chernobyl was discursively connected to British nuclear plants, it primarily adhered to the argumentative scheme: 'Sellafield is x-times more dangerous than the Chernobyl fallout.'[781] This argumentative scheme may also be found in France; mainly it is applied to the scenario of a plane crashing into the site of La Hague 'which would cause x-times the damage of Chernobyl.' But most frequently – and this is a very interesting difference between the

[781] The comparison to Sellafield is very prominent in the Irish Chernobyl debate as well. The Irish and the British Chernobyl debates are tightly interwoven, not at least via such individuals as Adi Roche and the common circulation of publications on Chernobyl across the Irish Sea.

British and the French nuclear discourses – the comparison is made the other way around and it is argued that: 'Chernobyl poses x-times a bigger risk than incident y.' This reversed line of reasoning is illustrated by the findings of an opinion poll that was conducted in 2006 by the French radiation protection agency, IRSN. This study on risk perception revealed that 50% of the interviewees – who formed a representative sample of the French population – perceived the nuclear fallout caused by Chernobyl to be a '*risque élevé*' ('elevated risk'). This meant, at the same time, that this fallout was perceived to be more risky than household accidents, genetically modified foodstuffs, or nuclear power plants in general.[782] Thus, in France, Chernobyl and its health effects in France have become a topic in and of itself, which – particularly through the compensation trials – has grown out of and separated from the nuclear discourse in which it was embedded initially. In Britain, however, the Chernobyl debate has very much remained within the confines of the nuclear discourse. At the same time, this discourse has further declined in recent years as the climate change context has led to a *denuclearization* of the British nuclear discourse insofar as many central issues in the debate about nuclear new build are not framed as 'nuclear issues' but rather are connected to the spheres of economics and global warming.

[782] IRSN, *Baromètre IRSN 2006. La perception des situations à risques par les Français* (Fontenay-aux-Roses: IRSN, 2006).

2.4 Conclusions drawn from the comparison of French and British Chernobyl debates

The comparison between the French and British Chernobyl debates shows clearly that '*the degree to which a country is affected by the hazard*'[783] is, with regard to Chernobyl, not proportional to the radioactive fallout that the country received. 'Risk exposure' cannot be understood in the terms of the absolute number of radionuclides that was deposited on a certain region or taken up by an individual. Although this approach has been proved to be useful in explaining the short-term changes in public opinion polls after Chernobyl[784] (given that it was taken for granted that the intensity of the fallout was communicated correctly), this approach cannot explain why in one country, France, an intense debate on the health impact of Chernobyl is sparked in 1996, whereas in Britain, a country with a comparable deposition of radionuclides (as far as may be discerned from the published figures), such a debate never rose to importance in public discourse. Therefore, the question is not: How much fallout deposited on a certain country or region? The question is: How has this fallout been perceived, and in what context? Thus, the interpretation of Chernobyl has been less the result of a direct physical impact and more a 'crystallization' of existing sets of values and beliefs. These values and beliefs determine the way in which the accident has been perceived and narrated, or not been considered at all.

By analysing the narratives that were presented by the various actors of the national Chernobyl debates, I was able to shed light on the ways in which Chernobyl has been perceived, interpreted and narrated in France and Britain. In this analysis, I focused on the narrative categories or elements of 'radiophobia' and apocalypse, self-affectedness, and anti-Eastern European/anti-Soviet stereotypes. The aspect of anti-Eastern European/anti-Soviet stereotypes played a more important role in the comparison between different narratives within a single national context than in the comparison between the two national case studies. Therefore, this conclusion will focus on the results of my analysis of the two aspects 'radiophobia' versus apocalypse and self-affectedness.

What kind of 'imagined world' regarding the dangers of radiation and its health impact affected the perceptions of and communications on Chernobyl? The narratives that developed around the Chernobyl accident can be situated on a spectrum between two extremes. At one extreme lies the explanation pattern of 'radiophobia' and at the other extreme is situated an apocalyptic narrative that describes Chernobyl as a type of allegory for the end of the world.[785] In their

[783] This phrasing is a quotation from Lynn Frewer et al., *Media reporting*.
[784] Hohenemser and Renn, *Shifting Public Perceptions of Nuclear Risk*.
[785] In this regard, English literature has often made a connection between Chernobyl and Revelations 8:10, 11, insofar as some have translated the term 'Chernobyl' to *wormwood* (as in the plant). This revelation says: '*And the third angel sounded, and there fell a great star from heaven, burning as it were a lamp, and it fell upon a third of the rivers, and upon the springs of water; and the name of the star is called Wormwood: and a third of the waters*

statements, the protagonists of the Chernobyl debate normally took a clear stance on health effects caused by the fallout and situated their statements closer to one of the two extremes of interpretation. Therefore, the first question applied when looking at the various sources regarding this category of comparison was the question 'Who said what?'. What interpretations were proffered by national public authorities and actors of the national nuclear industries? Did a specific counter narrative emerge in response to the official experts' evaluations, and if so, who paid attention to it; who believed it?

Secondly, investigating the narrative element of 'self-affectedness' enabled me to understand why Chernobyl became such an important topic and reference point in the French nuclear debate, while in Britain it almost sank into total oblivion before it partly resurfaced again in 2006. In fact, the detailed analysis of British Chernobyl literature that I carried out for this study should not leave the reader with the impression that Chernobyl was a prominent topic in British public discourse.[786] A purely quantitative comparison between the French and the British debate would only lead to the conclusion that there is barely grounds for a reasonable comparison between the two, especially with regard to the 20th anniversary. But a quantitative observation reveals very little about the debates themselves, and nothing at all about the reasons for this drastic difference. However, by conducting a qualitative comparison and looking more closely at the structure of the Chernobyl narratives present in the two national contexts, some very interesting findings come to the force. To accomplish this type of comparison, it was necessary to analyse in detail the accounts of the various actors present in the French and British Chernobyl debates. The British material is presented for the very first time, whereas most of the French material has already been examined in my book *Tschernobyl and France* and therefore is given less physical space in this study. In order to present the research clearly and concisely, the development of the debates is divided into three distinct time-slots: the accident and its direct aftermath, the trajectory of the debate from 1988 to 2005, and the debate that took place on the accident's 20th anniversary. The major markers of these three stages are as follows: For both countries, the debate in the direct aftermath of the accident was in many regards very similar. However, in the following stage the two trajectories split off. The British debate falls off sharply in the mid-1990s, while the French begins to expand and evolve. The mid-1990s were for both countries an important turning point: from this time forth, the aspect of self-affectedness in Britain almost entirely disappeared from the Chernobyl debate, whereas in France self-affectedness experienced a lively awakening from the mid-1990s onwards. In both countries,

became bitter; and many people had died of the waters, because they were made bitter.'

[786] Undoubtedly, the fact that there is no prominent public debate on Chernobyl in Britain does not mean that there is no debate at all. It may be that such debates are held in the private or non-publicly visible sphere. But this sphere was not included in the ambit of this study. The methods of sociology and anthropology and an entirely different set of sources would be needed to answer the question of whether such debates exist.

this changing perception of self-affectedness must be considered within the context of their respectively evolving nuclear policies. Finally, in the third stage, a closer look at the specific debate that was carried out on the 20th anniversary of the accident particularly clarified the degree to which national nuclear politics and policies and the perception of self-affectedness are interrelated in the Chernobyl debates.

But national nuclear politics and policies were not impervious to external influences, and so while these politics and policies shaped the respective Chernobyl debates, they too were in turn shaped and influenced by this debate. In addition, many more aspects influenced the different trajectories of the British and French debate. For this reason, I systematically located these debates within their historical context and referred to the national specificities that influenced their development and tenor. The aspects that I paid the most attention to were: the formation, role and status of 'experts' and 'counter experts'; national nuclear policies; the shape, political role and protest culture of the environmental and anti-nuclear movement; (the problematic issues of) the national nuclear fleet; and the importance of charities. In the following paragraphs, I wish to summarize the results of this contextualization. The conclusions that can be drawn from the comparison of the French and the British case are manifold. First, it becomes obvious that there is no single factor that can explain why the debate on the impact of Chernobyl developed differently in one country than in the other. Rather, a broad range of factors comes into play – factors that reciprocally influenced each other.

At first, it might seem that the debates on Chernobyl and its ramifications would have proceeded similarly in France and Britain. Each country was affected by a comparable degree of fallout in late April and early May 1986, and each had a highly developed nuclear sector. Both countries had an active anti-nuclear movement and had previously experienced accidents in their own national nuclear plants. Members of each government proclaimed that fallout from Chernobyl would have no relevant impact on their national territory – in both countries they were proven wrong. The French and British governments, radiation protection agencies, and various actors of the nuclear industry argued that an accident such as the one that had occurred in Chernobyl could not happen in their own country. Later, in both countries, the local doctors – in the French case on Corsica and in the British case on Benbecula – suggested a possible connection between increases in the cancer rates that they observed in their daily work and a possible health impact from the fallout. Finally, in both countries, single actors – Jean-Michel Jacquemin in France, Chris Busby in Britain – picked up this topic and dedicated a great deal of time in the search for national Chernobyl victims.

Despite these many similarities, the relative impact of the Chernobyl debates in France and

Britain could not have been more different. In France, Chernobyl became a national reference point for criticizing the central government and the country's political and scientific elite system. Conversely, in Britain, the Chernobyl solidarity movement is worried about maintaining support for its work as public memory of the accident has faded. In France, Chernobyl became a contemporary representation of threats to everyday life, while in Britain, it was relegated to the past; it was considered an accident that happened far away a long time ago. Few people remember the extensive restrictions that were placed on British sheep farms in the aftermath of Chernobyl because the animals were too radioactive to be sent to market.

To explain this process – i.e. the formation of a national environmental *lieu de mémoire* that is connected to the political scandal of the *affaire Tchernobyl* in France and the non-existence of this common point of reference in Britain – various aspects must be taken into consideration. The first and most important aspect seems to be the way in which national official experts and their evaluation of the fallout's impact were perceived by the public. As Brian Wynne argued, the interaction between experts and lay-publics is highly context-bound: '*Though they pervade all processes of "understanding", trust and credibility are contingent variables which depend upon evolving relationships and identities. [...] The fundamental interaction between scientific expertise and lay-publics is cultural, in that scientific knowledge embodies social and cultural prescriptions in its very structure. The problems of public uptake of science therefore lie in the institutional forms of science and of its incorporation into policy and administration*.'[787] In France, a rather large public took a critical stance towards the government and its nuclear experts, who had proclaimed that the French people had not been exposed to any risk. The distrust of the French public was fuelled by a more general criticism of the French elite system, specifically the exclusive positions graduates of the *Grandes Écoles* hold in the upper echelons of the state administration and their detachment from the rest of the society. Long before Chernobyl, the French *nucléocratie* had been blamed for being a closed circle of fortunate and privileged individuals who cared about their own career above all else. This general calling into question of key structures of the French nuclear sector, from the beginning was drawn into the debate on the health effects of Chernobyl. The fact that the state experts actively engaged in the debate on French self-affectedness increased the level of attention paid to this topic by a broader audience, and at the same time continuously instigated counter statements from critics. Confronted with a French government that promoted nuclear power at the global level as green solution to the climate change problem, the French anti-nuclear side transformed the debate on the health impact of Chernobyl into a proxy war in the fight about the legitimation of the nuclear enterprise.

[787] Wynne, *Misunderstood Misunderstandings*, p. 20.

Although the reactions of the British government and its nuclear experts in 1986 were in many regards similar to those adopted in France, there are several important differences in the contextual setting that account for the different development of the Chernobyl debate in Britain. One decisive aspect is how nuclear experts and their role in British society were perceived. With Oxford and Cambridge, the UK also has a longstanding tradition of a clearly distinctive scientific and political elite. However, the experts of the civil nuclear industry – be they the engineers or physicists – were never assigned the label of a group that was illegitimately detached from 'the average people'. They filled a significant role in society and, because of their education, were considered to be an authority in scientific evaluations. This fact was, however, never perceived to be as much of a problem as it had been in France. Therefore, the criticism brought forward by actors who challenged the official evaluations did not find in Chernobyl the fertile terrain upon which to disseminate their argument to a greater and more receptive audience. As I was able to demonstrate, critical voices that called into question the narratives presented by state experts did exist in Britain. But they were isolated phenomena. When the government passed the decision in the mid-1990s to no longer finance and go ahead with new nuclear new build projects, these voices lost even more terrain. At this point, unlike their French counterparts, British anti-nuclear power activists did not have to turn the debate on Chernobyl health effects into a proxy war in the fight over the legitimation of the nuclear enterprise, because their (national) fight seemed to have won itself. A 'discursive gap' formed that would come to be filled by the solidarity movement, and thus Chernobyl as an environmental *lieu de mémoire* lost its anti-nuclear connotations in Britain. As a result, Chernobyl became an accident that happened far away and long ago, an exciting event that could entertain British children and teenagers in youth science literature without, however, causing them to fear their own environment. The slow re-emergence of Chernobyl as a topic of public debate, which came about within the context of the re-emergence of government support for nuclear power in 2006, reveals how closely national debates on the impact of Chernobyl cleave to national nuclear policies.

Based on the analysis of these elements thus far, expert culture of the civil nuclear industry could be identified as the main factor to have shaped the national Chernobyl debates in France and Britain. However, as the further comparison of these two cases reveals, there are many other factors that had an important influence on the trajectories of these debates. In this regard, the role of individual agency should not be underestimated. In France, particularly in terms of the propagation of self-affectedness, actors like Michèle Rivasi and her CRIIRAD-colleagues, Jean-Michel Jacquemin, and local doctors on Corsica were most important. Without their involvement, it is unlikely that the debate on the health effects caused by Chernobyl in France would ever have gained

such importance. The propagation of the 'apocalyptic' narrative regarding the situation in the most affected areas of Eastern Europe – particularly by spreading the word about the work of Alexievich and Bandazhevsky – was also brought forward by individuals: without the activism and publications by individuals of the 'Caen group' and the CRIIRAD, these voices from Eastern Europe would have remained unknown in France. No such activism, or no comparable level of activism, exists in the British Chernobyl debate. Individual agency can also be found in the British case, for instance Chris Busby or the solidarity movement groups. But these groups (with the exception of Busby) neither lobbied for British self-affectedness nor in favour of an apocalyptic narrative – and Busby was mainly an isolated campaigner. In France, the number and variety of Chernobyl activists is considerable. Moreover, these activists were able to publish their Chernobyl accounts in large publishing houses, since – thanks to strongly perceived self-affectedness – there was a bigger market for Chernobyl-literature in France than in Britain.

The analysis of the French and British Chernobyl debates reveals another interesting finding with regard to individual agency. The existence of individual Chernobyl activists is not connected to or a result of the particular strength or certain degree of political institutionalization of the environmental movement. In both countries, the Green Party has played a marginal role in national politics. Close links between prominent individual Chernobyl activists and their respective national Green Party are also verifiable for both countries: Busby was a spokesperson for the Green Party and Michèle Rivasi has been an MEP since 2009. But in France, there are numerous political Chernobyl activists that are not necessarily connected to the Green Party, and in Britain, Chernobyl activism is rather a-political.

However, it seems that the shape of the national environmental movement has played a decisive role in the respective national Chernobyl debates in a different regard. It is not so much the strength or the degree of institutionalization that has influenced the respective national Chernobyl debates, but rather the way in which the environmental movement has addressed the topic of climate change. Without generalizing the position adopted by George Monbiot for the British environmental movement as such, Monbiot's determined fight against 'climate change deniers' hints at an aspect of the British case that might differ from other countries. A 2009 opinion poll taken in Britain revealed that only '*some 41 per cent of those taking part in today's poll agreed that it has been established that climate change is largely due to human activity*.'[788] This context might partly explain Monbiot's strong insistence to make the fight against climate change and to sensitize the

[788] Telegraph online, "Only two in five believe climate change caused by human activity," 14 November 2009, http://www.telegraph.co.uk/earth/earthnews/6565955/Only-two-in-five-believe-climate-change-caused-by-human-activity.html (last accessed: 15 June 2013). Franz-Josef Brüggemeier's drew my attention to the British climate change debate, Franz-Josef Brüggemeier, *Geschichte Großbritanniens im 20. Jahrhundert* (München: Beck, 2010).

public on this topic a priority for environmental campaigners. At the same time, Monbiot has used climate change as an argument with which to attack anti-nuclear campaigners because, according to him, their activities have hindered international efforts to work against global warming. And, as the publicized switching of sides of some other former anti-nuclear campaigners over to the pro-nuclear camp clearly shows, Monbiot is not alone in his view.

But despite this diminution of the anti-nuclear power movement due to the successful marketing of nuclear reactors as 'climate saviours', British anti-nuclear power protest has never been strong. The focus of British anti-nuclear campaigners has always been directed at the military applications of nuclear technology. And even before people like Monbiot changed sides, the small group of anti-nuclear power campaigners had already lost much of its influence after the moratorium on British new build in the mid-1990s. The rare instances of public anti-nuclear power criticism that were voiced after the mid-1990s have been directed at Sellafield and not Chernobyl. The Sellafield-Windscale complex has always been Britain's primary reference point with regard to self-affectedness and government cover-ups; and it has maintained this position also after 1986. For this reason many accounts on Chernobyl used Sellafield as the analytic framework or unit of comparison. The fact that one of the British regions most affected by the Chernobyl fallout, the Lake District, is also the region that houses the Sellafield site has reinforced the discursive connection between these two nuclear threats. Furthermore, the restrictions placed on sheep farms in this region after Chernobyl caused the Windscale Fire to resurface in public memory. First, research in the Chernobyl fallout always included a reference to the Sellafield-Windscale complex, since the 'background radiation' in this region was already higher because of the contamination from 1957. Second, this setting resulted in the local perception that the counter measures taken against the Chernobyl fallout were actually the delayed effects of the Windscale Fire: because the region had already had a higher level of background radiation prior to the Chernobyl accident, dose limits were exceeded only because of the sum of the two fallouts.

British self-affectedness, therefore, was not so much the perceived victimization brought about by the events of 1986, but rather a self-affectedness connected to the (re-)discovery of the permanent threat posed by the nuclear installations in the country itself, in particular Sellafield. This interpretative pattern may be found in very early critical accounts on Chernobyl as well as in the later publications written by Chris Busby. In this regard, for instance, attached to the account on 'The Chernobyl fallout' in Mackay's and Thompson's 1988 compilation *Something in the wind* was a map showing the '*danger zones around nuclear reactors in Britain*' instead of the Chernobyl fallout intensities in the UK.[789] Furthermore, Busby used the impact of Chernobyl in Britain mainly as an

[789] Mackay/Thompson, *Something in the wind*, p. 48.

argument to underpin his statements on the devastating health effects of British nuclear power plants. In France, however, Chernobyl was treated mainly as a distinct and independent event. Although the Chernobyl debate – through the correlated criticism of the *nucléocratie* – was discursively closely connected to the French nuclear enterprise, the debate on the fallout's health impact did not lead, for instance, to a re-discovery of the 1969 accident in Saint-Laurent. Moreover, as revealed by the 2006 IRSN opinion poll, the Chernobyl fallout in France was perceived to be a bigger threat than national nuclear installations.[790] Thus, we are confronted with a situation that demonstrates rather the opposite traits of what was encountered in Britain. Indeed, on the 20th anniversary of the accident the Chernobyl debate, within the context of the protests of the EPR project in Flamanville, made reference to the threats represented by the French civil nuclear enterprise. But still, also in 2006, public discourse treated the health effects of Chernobyl in France as a separate topic that was independent from any possible health effects that might have been caused by the national nuclear fleet. This discrepancy points to a profound difference in the respective national attributions of nuclear risk. A simplified list ranking the risk attributions (from highest to lowest) in Britain would look something like this: 1. nuclear weapons, 2. re-processing plants, 3. nuclear power plants, 4. Chernobyl fallout. In France, however, this ranking would be reversed, with Chernobyl fallout in the first position and nuclear weapons in the last.

In this regard, the argument on the 'externalization of fears' that Melanie Arndt used to explain the reasons underlying West German Chernobyl solidarity activities can be applied to the British case as well: Inviting 'Chernobyl children' for recreational stays to the UK has helped the host families to externalize their worries about the nuclear installations close by on the national territory. In France, however, the 'foreign radiation' and its impact on the country have formed the focal point of the public Chernobyl debate and many people have perceived the health risks of the fallout to be more dangerous than the presence of nuclear power plants just a few kilometres away. It may be that this risk attribution is a long-term effect of the profound pride in the national nuclear technical capability, which Gabrielle Hecht described with regard to the French post-war period. The fact that the employment of foreign contract workers in French nuclear plants – the 'nuclear nomads' who do the most radioactive-dirty work – has for a long time been a central point of criticism against French nuclear policies[791] might further underpin this hypothesis. Undoubtedly, the

[790] I am thankful to Heinz-Gerhard Haupt who pointed out to me that in France, there is a long history of identifying problems outside of France and mobilizing against their impact on the country. Mobilization has been particularly successful in cases that do not address problems generated nationally. In this regard, the perception that the foreign Chernobyl fallout was more dangerous than emissions from, for instance, La Hague, could be considered an interesting topic of study in an investigation into French political culture, which goes far beyond the case of nuclear politics.

[791] In relation to the 'nuclear nomads', there are two aspects that emerge in the criticism of this employment practice: First, it is considered problematic that French employers may pay less attention to the received radioactive doses of

British post-war era experienced similar levels of pride in the national nuclear technical capability, which was iconified by Queen Elizabeth II's inauguration of *Calder Hall*. But this came to an end with the privatization of the British nuclear industry and the sale of the British nuclear power plants to a French company, the EDF. In France, however, the government's and EDF's lasting commitment to the strategy of '*tout nucléaire*', the successful creation of Areva, the development of the EPR, and the proclaimed 'nuclear renaissance' which discursively – within the context of the climate change debate – transformed nuclear plants from the grey monolithic projections of the planning fantasies and the strong belief in technology-driven steady progress of the 1960s into environmentally benign steam generators of the future. This setting created the ideal conditions within which the pride in the national nuclear technical capability could live on and, at the same time, within which nuclear risk could be attributed to foreign entities, like the Chernobyl fallout. To connect this attribution of nuclear risk back to the almost total lack of space dedicated to the recreational stays for 'Chernobyl children' in France in the public Chernobyl debate, I would like to present the following hypothesis: one of the reasons why recreational stays for 'Chernobyl children' in France are not more diffuse may have to do with a sense of unease or the worry that the presence of these children could result in an increase in the perception of risks associated with the French nuclear installations. Thus, in France, the recreational stays of 'Chernobyl children' have a latent tendency toward politicization, whereas in Britain they rather contribute to the allocation of radiation health effects to the private sphere.

Finally, when the wider contextual settings of the two countries' political systems and political cultures are taken into consideration, several interesting similarities and differences that helped to shape the respective Chernobyl debates come to the force. In both countries, with the exception of the *Greens*, the emergency management of the 1986 crisis on the part of the public authorities did not become a political argument amongst opposing parties. In France, this can be explained by the fact the *Première Cohabitation* and, therewith, a broad coalition of the French political spectrum was responsible for the official reactions to the 1986 crisis. In Britain, however, where one might have expected *Labour* to have turned the quarrel over the sheep farm restrictions into a political argument against the Thatcher government, it seems that *Labour's* internal disaccord on nuclear policies is what prevented Chernobyl from becoming a political argument at the level of national party politics. Despite this similarity between the French and British Chernobyl debate, there were other contextual settings and characteristics of each country's political system and political culture, however, that contributed to the very different development of these two national

this group of workers than to the doses their French unionized colleagues are subject to. Second, there is an underlying fear that these contract workers –who often come from Eastern Europe – might somehow undermine French security standards.

Chernobyl debates. The centralized political system in France facilitated the transferral of what had begun as a local and regional issue to a national topic of debate: the issue of Chernobyl fallout and its possible health effects did not remain confined to Corsica, Alsace or the Mercantour, but quickly reached national proportions. Because most of the key actors in the French Chernobyl debate are present on a national scale – be it the government, the radiation protection agencies (SCPRI, IPSN, IRSN), the plant operator (EDF), or the main anti-nuclear activists (Greenpeace France, *Réseau: sortir du nucléaire*) – their arguments never remained in the local or regional context, but were immediately brought to the national level. In Britain, however, the local and regional debates – in particular those regarding the sheep farm restrictions in the Lake District and in Snowdonia – remained very much on these levels. This is, for instance, illustrated by the fact that it was mainly regional and not national newspapers that reported on this issue, and that they were 'regional' landowner's and farmer's unions that expressed their stance on Chernobyl. Undeniably, to apply the term 'regional' to the countries of England, Wales, Scotland and Northern Ireland is a major offence. Moreover, such word choice negates today's constitutional reality and the fact that after the referendum in September 2014 Scotland may no longer be part of the UK. But this is precisely the point I wish to make: The fact that there is a Scottish Parliament that has the power to make the decision to ban and prevent nuclear new build in Scotland has very much diversified the current nuclear debate in the UK. The result is that there is no longer a unitary British nuclear policy today. In France, however, no 'intermediate' power exists that can cross and call into question decisions that have already been taken by the national government. Here, all debate on nuclear issues must be made at the national level. In Britain, the multi-level setting allows for a more scattered or diversified debate. Moreover, the various instruments (inquiries, hearings, and committees) that form an important part of the British political decision-making process and procedures, have contributed to the creation of a British nuclear discourse that is far less confrontational than the one that has developed in France. This is not to imply that the instrument of inquiries is not problematic; indeed, it has been severely criticized and accused of being a mere ritual that provides the results the government wants. However, the fact that these inquiries do exist is a guarantee of far more public involvement; it at least gives the public a voice in, for instance, siting decisions. The instrument of committees has also enabled and forced opposing sides within the British nuclear debate to sit together at a table and discuss their positions. For instance, the *Committee Examining Radiation Risks from Internal Emitters* (CERRIE) has brought together Chris Busby and other anti-nuclear activists from Greenpeace and LLRC with representatives of the NRPB and BNFL.[792] In

[792] For further information on CERRIE and its members, see the committee's website: http://www.cerrie.org/about.php (last accessed: 15 November 2013).

France, however, such constellations are far less evident, as the example of *Flamanville 3* clearly shows. Although an *enquête publique* ('public enquiry') was organized, opponents of the new build project saw in the measure mainly a dishonest attempt to get the public to give its blessing to a project in which it did not have a real voice.[793] Therefore, many anti-nuclear groups refrained from participating in the hearing. Despite the broad mobilization against the new build project, a decree by Prime Minister Dominique de Villepin authorized the EDF in April 2007 to move ahead with the construction of the first EPR in France.[794] Such events only reflect and reinforce the public perception that the French nuclear techno-political regime is far more closed than its British analogue.

The examples of the French and British Chernobyl debates also clearly demonstrate how a disaster is not debated in a discursive vacuum but instead is always related and compared to the effects of other disasters. The references to the *affaire du sang contaminé* ('contaminated blood scandal') that are found in the French Chernobyl debate and the close connection between Chernobyl and the Sellafield-Windscale complex, which figures so prominently in the British Chernobyl debate, are telling examples. At the same time, the Chernobyl debates have deeply influenced the way in which both countries – and in particular the actors of the respective Chernobyl debates – reacted towards Fukushima. Their reactions exemplify how much the perception and memory of disaster are framed by contemporary settings and previous experiences.

In summary of my findings from the comparison between the French and British Chernobyl debates, the following general picture emerges: Different perceptions of the power dynamics within the two national nuclear techno-political regimes lay at the source of the different trajectories that the Chernobyl debates in France and Britain took. In France, from the outset, Chernobyl was framed as a French debate, and it was placed into the context of the *nucléocratie*. In Britain, such an interpretative framework did not exist for the civil nuclear programme, since the predominant criticism against the nuclear enterprise had always been directed against the military complex and was more focused on aspects of international relations than on the national nuclear energy complex. In Britain, Chernobyl was considered from a global perspective, whereas in France the focus was placed on the accident's impact at home. However, with the end of the Cold War and the British government's decision in the mid-1990s to no longer finance new nuclear power plants, anti-nuclear positions as such lost their impetus. Thus, few people in Britain were interested in transforming the

[793] For this criticism, see for example: Jean-Stéphane Devisse et al., "Débat public sur l'EPR: une crédibilité à construire," in *Les Echos*, 10 January 2005; Michel de Pracontal, "EPR: premier débat, cahin-caha," in *Le Nouvel Observateur*, 10 November 2005.

[794] The decree is available online: http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000276348&dateTexte=&categorieLien=id (last accessed: 15 November 2013).

debate on the health impact of Chernobyl into a proxy war in the fight over the legitimacy of the civil nuclear enterprise as was happening in France. Leaving this discursive and commemorative gap to be filled by the solidarity movement, in Britain, Chernobyl did not become an anti-nuclear *lieu de mémoire* as it did in France, and it instead became associated primarily with charity activities for the disabled or unprivileged children of Eastern Europe which effectively 'depoliticized' Chernobyl and separated it from the nuclear debate.

In addition to interesting insights into French and British nuclear discourses and various aspects of the countries' political, social and cultural history in the timespan between 1986 and 2006, an analysis of the two Chernobyl debates provides telling examples that underpin sociological theories. For instance, the emergence of French counter expertise like the CRIIRAD or Busby's studies on the health effects of British nuclear plants shows that in both countries the anti-nuclear arguments had to be based on natural science studies and research in order to be considered valid in public discourse. The disclosure of the 'truth' about Chernobyl had to be based on scientific 'fact'.[795] This phenomenon adheres to the widely recognized '*Verwissenschaftlichung*' ('*scientification*') of various societal issues in the modern world. In relation to modernization theory, there is another prominent issue that is implicit in the Chernobyl debates: the issue of uncertainty. The enormous variety in the estimations of the Chernobyl death toll – which is directly related to the general debate on the possible health effects from low-level radiation – represents the degree of uncertainty that is involved in the evaluation of Chernobyl's impact. The issue of uncertainty in these debates goes far beyond the specific case of Chernobyl: amongst others, it calls into question the integrity of international organizations, the models that were internationally applied to decipher the relation between radiation doses and health effects, global energy policies, and the way in which the (nuclear) scientific community operates in general. The various actors of the Chernobyl debate chose different strategies to manage this uncertainty. Wolfgang Bonß identified three basic options to handle the uncertainties in the modernized modernity: the calculation and acceptance of (residual)risks; the prevention and avoidance of damage; the communication and politicization of the risk discourse.[796] All three of these basic options were used by the actors of the Chernobyl

[795] As Wolfang Rüdig was able show, scientification was an essential part of the formation of a German environmental 'counter expertise' as well. See: Rüdig, *Mobilising Environmental Expertise*.

[796] Bonß, *Vom Risiko*, Kapitel III: Zum Umgang mit Ungewissheit in der modernisierten Modern, Unterkapitel 1: Drei Grundoptionen: Kalkulation und Inkaufnahme von (Rest-)Risiken, Prävention und Schadensvermeidung, Kommunikation und Politisierung des Risikodiskurses. Ibid, p. 240: '*Aber ungeachtet aller Differenzen im Detail verweisen die jeweiligen Argumentationen immer wieder auf drei Grundoptionen für den Umgang mit den Unsicherheiten der modernisierten Moderne. Einerseits kann man versuchen, die veränderte Situation mit den alten Mitteln weitgehend unkorrigiert zu bewältigen. Andererseits gibt es die Variante, die Strategien der kalkulatorischen Risikobewältigung durch Formen der Prävention und Schadensvermeidung zu ergänzen, und jenseits dessen kann man schließlich auch für eine kommunikative Verflüssigung und Politisierung des*

debate: the public authorities and the nuclear industry mainly applied options one or two, whereas the critics of the official evaluations made use of option three. In this regard, the Chernobyl debate is not a unique phenomenon. On the contrary, it shows many similarities to other (post)modern debates, such as the debate on genetically modified organisms (GMOs). There will never be a definite and universally accepted answer to the question of the number of Chernobyl victims. This is because the question itself and the definition of victim have both become politicized and each and every attempt to produce an answer only raises new questions. Bonß has expressed this dynamic quite concisely: '*The price we must pay for this growing power over reality lies in the increasing potential of uncertainties, which are produced scientifically but which cannot be completely dominated. From the perspective of the theory of society, the contemporaneity of increasing potentials of configurations and of increasing potentials of uncertainties means that the attempt – that characterizes modernity – to exercise an unambiguous control over nature has only limited success, and in some respect even results in the opposite. Under the conditions of a "reflexive modernity" (Beck, 1993) that which becomes apparent are, in effect, "an end of unambiguousness" (Baumann, 1992) and "uncertainty as a diagnosis of time" (Kaufmann 1973).*'[797]

Risikodiskurses votieren.'

[797] Ibid, p. 84: '*Denn der Preis für die wachsende Verfügungsgewalt über Wirklichkeit liegt in parallel zunehmenden Unsicherheitspotentialen, die wissenschaftlich produziert, aber nicht vollständig beherrscht werden können. Unter gesellschaftstheoretischen Gesichtspunkten bedeutet die Gleichzeitigkeit von wachsenden Gestaltungs- und Unsicherheitspotentialen, daß der die Moderne kennzeichnende Versuch, eine eindeutige Naturbeherrschung zu realisieren, offensichtlich nur begrenzt gelingt und in mancher Hinsicht das Gegenteil zur Folge hat. Denn was sich unter den Bedingungen der „reflexiven Moderne" (vgl. Beck 1993, 72 ff.) abzeichnet, sind ein „Ende der Eindeutigkeit" (Baumann 1992) und „Unsicherheit als Zeitdiagnose" (Kaufmann 1973, 14).*'

Unanswered questions

I have reiterated many times throughout the text that the British anti-nuclear power movement was always rather weak, I never provided any further explanation for this fact, however. This is not because I was implicitly referring to some 'common knowledge' explanation that most nuclear historians are familiar with. On the contrary, there is no such explanation and I myself am still looking for a satisfying answer. Many times over the last few years, I have posed the question 'Why isn't the anti-nuclear plant movement in the UK stronger?' to various individuals who have a connection to British nuclear history. From the historians researching the UK environmental history to anti-nuclear activists, one common answer was given across the board: 'People just don't care!' When asked my follow-up question: 'But why do they not care?', I was given a plethora of explanations. Unfortunately, I was not successful in synthesizing this multitude of aspects of 'British culture' into one coherent hypothesis on 'British nuclear plant neutrality'. Perhaps, it was because I was asking the wrong question: Having grown up in Germany and having carried out in-depth research on the French nuclear debates, I am just more surprised to have encountered the absence of an anti-nuclear power movement than I would have been had I run into its existence. Perhaps, this is simply not the way I ought to be looking at the case of Britain. And perhaps, more in general, it also makes more sense to inquire into the reasons why something exists than to ask why something does not. But still, I think it makes sense to ask this question, if even for the simple reason that nobody yet has been able to give me a satisfying answer. Of course, it is easier to present a coherent argument that is based on the existence of sources than on their absence. This is the same problem I faced for my case study on Chernobyl: It was far easier to come up with hypotheses for the French case, where there was even more material available than I could analyse than it was to understand the almost complete absence of a Chernobyl debate in Britain. I hope that with this work, I can at least provide some answers to the question 'Why has the Chernobyl debate been of minor relevance in Britain?'. The question as to why the British anti-nuclear power debate is so minor, however, must remain unanswered. At any rate, I hope that through this case study on Chernobyl I was able to highlight some important aspects of the British nuclear discourse that might contribute to the history of Britain’s civil nuclear programme, which has yet to be written.

III THE TRANSNATIONAL CHERNOBYL DEBATE

It would be limited to look at publications by only authors from the UK and France when researching the narratives of the respective Chernobyl debates of these countries. Specifically with regard to Britain, the fact that very few publications by British authors were released between the early 1990s and 2006 in an attempt to reach a wider audience with a specific interpretation of the accident must be looked at from a broader perspective. This broader perspective is crucial for gaining an understanding of the discursive context of the 'renaissance' of the Chernobyl debate on the occasion of the 20th anniversary in 2006. Therefore, this chapter examines the transnational sphere of the Chernobyl debate. It pays special attention to the way in which Chernobyl narratives from outside Britain and France were received and perceived in these two countries. In addition, it provides some additional references to the German Chernobyl debate. This account gives more space to 'apocalyptic' narratives, insofar as academic research has thus far paid less attention to apocalyptic narratives than to 'radiophobic' narratives. It closely investigates through what kinds of paths, mediators and networks these narratives were distributed. In addition, this chapter assesses whether intertextuality exists between certain publications, and which authors and works have been received across linguistic borders. Although, in the following analysis, a similar amount of space is dedicated to each of the various actors, this does not necessarily mean that they are to be considered on a similar level in terms of their potential to influence policies. There are clear power hierarchies that separate these actors. Their impact on political decision-making very much depends on how decision-makers judge their relevance, and this setting can differ quite substantially from one national context to another. Despite these national differences, reports by international organizations and in particular UN organization are mostly considered to be highly credible on the part of the national governments and the public.

3.1 Voices from the East and their reception in the West

From the early 1990s onwards – and in particular on the occasion of the 5th anniversary of Chernobyl in 1991 – the various national Chernobyl debates in Western Europe received important input from external sources. In the late 1980s, the literature on Chernobyl that was available internationally and had been received across national boarders primarily consisted in the reports released by the IAEA and the international[798] Chernobyl expert groups. As discussed in the previous

[798] With regard to the actors, I use the term *international* in reference to international governmental organizations (IGOs) and the term *transnational* in reference to the activities of non-governmental organizations (NGO) and the

chapters, Western public authorities and actors of the national nuclear industries adopted the narratives presented in these reports and incorporated them into their communications on Chernobyl. At the same time, these narratives were profoundly criticized by anti-nuclear activists and specialists on Eastern Europe who had, thanks to their language skills, access to critical voices that had been raised in the USSR very shortly after the accident. Thanks to the *perestroika* and *glasnost* as well as to the growing strength of national independence movements within the USSR, these critical voices progressively grew in strength in the following years and became available to a wider audience.[799] Public criticism of how Moscow had managed the Chernobyl crisis and of the Soviet government's information policies became a linchpin for the call for national independence, particularly in Belarus and Ukraine. Tatiana Kaspersky described these dynamics very clearly: '*Between 1989 and 1991, dozens of rallies burst forth in Minsk, Kiev, Moscow and in some of the localities of the most contaminated regions; the first maps of the radioactive contamination were published; and multitudinous critical articles on the handling of the disaster by the Soviet authorities appeared. A number of the representatives of Chernobyl victims were elected to the Soviet Supreme Soviet and the Supreme Soviets of the Belarus and Ukraine. The Belarusian and Ukrainian nationalists' movements, represented, respectively, by Belarusian Popular Front (BPF) and Popular Movement (Rukh), became, in 1989-1991, leading actors of the Chernobyl protest movement. Together with the nationalists' movements in other republics they also contributed to the collapse of the USSR. These movements were strongly connected to such developing green and antinuclear protests' actors as the organization "Zelenyi Svit" in Ukraine and "Nabat" in Belarus. They also collaborated with dissident scientists in the republican academies of sciences who protested against norms of radiological protection imposed by Moscow official experts. Finally, they sought to involve the inhabitants of the most contaminated regions, liquidators, and relocated people in their protests. This pre-eminence of nationalist movements in the Chernobyl protests led to the "nationalization" of public memory of the Chernobyl disaster. The accident appeared in public discourse first of all as a crime of colonial communist authorities against Belarusian and Ukrainian nations, or even as a "radioactive genocide" of its people.*'[800]

initiatives from within civil society that reach across national borders.

[799] These dissident voices have not yet been subject to a broader scientific research project. As a first important move in this direction, Thomas Bohn provides interesting background information on the most important authors in his forthcoming article: Thomas Bohn, "From Recording the Catastrophe to Tackling the Trauma: Chernobyl in (Post-) Soviet Documentary Literature." In *The Impact of Disaster*, ed. by Bohn et al., forthcoming.

[800] Bauer/Kalmbach/Kasperski, *From Pripyat to Paris*.

3.1.1 Zhores Medvedev, Grigori Medvedev, Alla Yaroshinskaya, Vladimir Chernousenko

Zhores Medvedev

Zhores Medvedev was amongst the earliest critics with a background in Eastern Europe whose voice was heard in Britain. Already in 1987, he published an article in *The Environmentalist* in which he criticized the information policy of the USSR officers towards the evacuees and people living in the most affected areas. This article served as the basis for Mackay and Thompson's account on the accident in their 1988 book *Something in the wind*. This 1988 publication also included an article by Medvedev on the Soviet nuclear energy programme. In the English-speaking world, Medvedev had already established his role as an 'investigative insider' ten years earlier with his book on the Kyshtym accident;[801] it was thanks to his book that this accident at the military nuclear facility *Mayak* in the Urals came to be know by a broader public in the West.[802]

The fact that Medvedev had been exiled from the USSR in 1973 and had ever since been working as a research scientist for the *National Institute for Medical Research* in London further strengthened his public credibility as an independent scientist. Thus, when in 1990 he published his book *The Legacy of Chernobyl*,[803] it automatically became one of the most important references works in Britain. In this book, Medvedev described in detail the possible impacts the Chernobyl fallout would have on people, plants and animals. To write this book, Medvedev had not undertaken research in Chernobyl himself, but had carefully studied the various papers and reports that had been published on the topic both in the East and in the West. The result was a concise account of the state of the art in Chernobyl research, which also included his harsh criticism, for instance of the unnecessarily high levels of radioactivity the emergency workers had been exposed to. Regarding the death toll, Medvedev refrained from taking a clear stance on numbers because: '*There is insufficient relevant information to enable an accurate assessment of the health consequences*.'[804] Instead, he discussed the different reports that had been published thus far. For the highest estimate, he presented a study by R. E. Webb that was published in *The Ecologists* in 1986, which predicted 280,000 extra cancer deaths worldwide.[805] However, with regard to this study, Medvedev criticized the fact that the author had '*consider[ed] radiation-related cancer deaths*' only. From Medvedev's perspective – which was the point of view of a specialist in ageing research – '*the general reduction*

[801] Zhores A. Medvedev, *Nuclear disaster in the Urals* (New York: Norton, 1979).
[802] A French translation of his book appeared quite some time later, in 1988: Jaurès Medvedev, *Désastre nucléaire en Oural* (trad. de l'anglais par Anne-Rose Fontanet, Roger et Bella Belbéoch) (Cherbourg: Isoète, 1988).
[803] Zhores A. Medvedev, *The legacy of Chernobyl* (Oxford: Basil Blackwell, 1990).
[804] Ibid., p. 165.
[805] Ibid., p. 166.

in life expectancy as a result of radiation exposure'[806] is what should have been researched instead. Furthermore, Medvedev pointed out 'odd' discrepancies of the debate on the Chernobyl health effects, for instance: '*it should be stressed that the initial Soviet and IAEA reports on the level of radiation exposure of the population and the projected health risks made in 1986 were much higher than the figures given later. The origin of the confusion has never been explained*.'[807] And last but not least, Medvedev tied his discussion of the various Chernobyl reports and accounts in with statements on the wider discourse on energy policies: '*the heated debate about possible future health effects of Chernobyl is understandable. […] If the lowest estimates are right, the safety record of nuclear energy remains better than that of coal, oil and hydroelectric power. But if the highest estimates prove accurate, the outlook is vastly different*.'[808]

Medvedev's Chernobyl narrative to a large degree was a critical account of the official evaluations. But his criticism was not limited to Chernobyl. Medvedev did not consider Chernobyl to be a single isolated event. Instead, he considered the accident to reside within the larger framework of Soviet energy policies and, at the same time, called into question many 'facts' that the international nuclear community had agreed upon thus far in its evaluation. However, Medvedev did not present a concrete counter narrative to this official evaluation. His aim was to highlight those areas in which scientific knowledge was still lacking and to point to issues on which the existing knowledge might be biased. In so doing, *The legacy of Chernobyl* opened the Chernobyl debate to new findings: A respected scientist without any connection to the nuclear sector had made a clear, comprehensible statement on the problems that were implicit in the official reports; it was a clear invitation to other 'counter experts' to join the debate.

As important as Zhores Medvedev's book was for the British Chernobyl debate, it was, very surprisingly, never translated into French. Not even the English version is available in the French National Library (BNF). This is even more surprising given that Medvedev's book on Kyshtym was translated in 1988; an edition for which Roger and Bella Belbéoch had been the translators. Thus, *The legacy of Chernobyl* is a particularly striking example of the degree to which Western European national Chernobyl debates were separated by linguistic boarders. The book written by Robert Peter Gale is another example. Gale, an American doctor, had carried out several bone marrow transplants on the Chernobyl firefighters in Moscow in the weeks following the accident. This work was financed by American millionaire Armand Hammer. In 1988, Gale published his book *Chernobyl – The final warning*[809], which was a combination of his diary from his time in Moscow and general

[806] Ibid., p. 130.
[807] Ibid.
[808] Ibid., p. 166.
[809] Robert Peter Gale, *Chernobyl: the final warning* (London: Hamilton, 1988).

thoughts regarding the probabilities nuclear accidents could occur and the problems inherent to large-scale evacuations. Because the book included far more details on Gale's daily life in Moscow than it did statements on the impact of Chernobyl, it is not discussed. Regardless, or perhaps rather because, of this act of self-marketing, Gale's surgery work in Moscow is mentioned in almost all accounts on Chernobyl written in English. In the French context, however, Gale's work never had a role in the Chernobyl narratives: he is not mentioned in descriptions of the accident, nor does anybody refer to his opinion on the lessons that should be learned from Chernobyl. Like Zhores Medvedev's publication, no copy of Gale's book is preserved in the collection of the BNF.

Grigori Medvedev

Another Medvedev deeply influenced the French Chernobyl debate: Grigori Medvedev. His book, *The truth about Chernobyl* was first translated from the Russian original into French in 1990,[810] before the English edition was published in 1991.[811] Grigori Medvedev had been a high-ranking Soviet nuclear engineer, who had worked at the Chernobyl construction site in the 1970s and was, in 1986, involved in the investigation into the causes of the accident. In his book, Medvedev presented a detailed account of how the accident unfolded; this was a narrative that in the years to come would become the main reference for descriptions of the accident. But Medvedev did not stop with a detailed account of the chain of events leading up to and including the accident; he enriched his story with sharp criticism of the Soviet nuclear programme. According to him, the staff at the plant was clearly responsible for the events of the night from 25 to 26 April: '*Toptunov and Akimov, who came on duty that night, as well as the operators and all the preceding shifts on 25 April 1986, failed to show the proper sense of responsibility and blithely proceeded to commit serious breaches of the nuclear safety regulations*.'[812] However, the blame could not be placed on the staff alone; the deeper problem lay in the general logic of how the nuclear system functioned. In this regard, it is opportune to quote the first sentences of Medvedev's final chapter – titled '*A new culture for the nuclear age*' – in which he openly addressed his larger agenda: '*But so much still remains to be done! What further lessons still need to be learned! What battle must be fought in order to make our earth truly clean and safe for life and happiness! Meanwhile, the nuclear bureaucrats are not asleep. Though somewhat bruised by the Chernobyl explosion, they are once again rearing their heads, praising the completely "safe" power of the peaceful atom, while not forgetting to cover up the truth. For it is not possible to sing the praises of the peaceful atom unless the truth is covered*

[810] Grigorij Medvedev, *La Vérité sur Tchernobyl*, (Paris: A. Michel, 1990).
[811] Grigori Medvedev, *The truth about Chernobyl* (London: Tauris, 1991).
[812] Ibid., p. 57.

up.'[813]

Medvedev's account focused on the chain of events leading up to and including the accident, and therefore the impact of Chernobyl's fallout was not addressed in the book, especially not from a broader geographical perspective. In this regard, *The truth about Chernobyl* was not a counter narrative to any official report on health effects. It was rather a counter narrative to the early official reports that had, also in Britain, described the emergency actions as having been well planned and coordinated. As opposed to the official reports, which were filled with scientific data, Medvedev provided the personal story of the event: his was a minute-by-minute or even second-by-second account of the plant workers' and firefighters' struggle for life, large portions of which were written like a play with dialogues. Medvedev's description was completed by transcriptions of eyewitness accounts.

The material Medvedev had collected for *The truth about Chernobyl* and the reactions following its publication – including the attacks that were directed against Medvedev – were enough for a second book: *No breathing room. The aftermath of Chernobyl*' was published just two years later.[814] In *No breathing room*, Medvedev told the story behind his first book: how he had become an anti-nuclearist, his work on the book, the difficult search for an editor, etc. Medvedev underlined that the criticism he had expressed in *The truth about Chernobyl* was not directed against the Soviet nuclear system alone. In this regard, the fall of the Soviet Union was for him a crucial moment: '*Perhaps the most telling question of all: is the Western capitalist society really a suitable model for the former Soviet regime to follow – that is, can it be stated honestly that many of the problems that led to the Chernobyl catastrophe are not also present in the West?*'[815] Thus, Medvedev's reasoning openly contradicted the narrative provided by Western public authorities that 'such an accident can not happen here'.

The introduction to Grigori Medvedev's second English Chernobyl book was written by David R. Marples. Marples, Professor at the University of Alberta and specialist in Ukrainian, Belarusian and Russian history, was one of the first scientists in the humanities who conducted research on Chernobyl. Already in 1987, Marples' first book on Chernobyl had been published: *Chernobyl and Nuclear Power in the USSR*.[816] Only one year later, his next followed: *The Social Impact of the Chernobyl disaster*.[817] Through his work on the impact of Chernobyl, Marples became increasingly more interested in Belarus, an interest which led to the publication of his third book on

[813] Ibid., p. 265.
[814] Grigori Medvedev, *No breathing room: the aftermath of Chernobyl* (New York: Basic Books, 1993).
[815] Ibid., pp. 28.
[816] Marples, *Chernobyl and nuclear power in the USSR*.
[817] Marples, *The social impact of the Chernobyl disaster*.

Chernobyl: *Belarus: From Soviet Rule to Nuclear Catastrophe*.[818] Through his work, Marples clearly established himself as an international expert on Chernobyl, but primarily with regard to the political impact of the accident and not on its health impact. For this reason, an account of his work will not be included in this study.

Alla Yaroshinskaya

Another author who attempted to lift the veil of the *The forbidden truth* about Chernobyl was Alla Yaroshinskaya.[819] Interestingly, the 1995 English edition of her book was not a translation from the Russian original, but from the French version, which had been released in 1993.[820] In her book, the journalist Yaroshinskaya described the way in which information on Chernobyl had been systematically held back by the Soviet state. The following quote from the book may be regarded as a kind of summary of her arguments: '*The most dangerous isotope to escape from the mouth of the reactor did not appear on the periodic table. It was not "Cs-137". It was "Lie-86". A lie as global as the disaster itself*.'[821] In the US edition, which was published in the following year by the University of Nebraska Press, it was again Marples who provided an introduction. Furthermore, a foreword by John Gofman – former professor at UC Berkeley and one of the most prominent voices in the debate on the health effects of low-level radiation exposure – was added. In 1992, together with Yaroshinskaya, Gofman was awarded the *Right Livelihood Award* – also referred to as the *Alternative Nobel Price* – for his work on the health effects of ionizing radiation. In conformity with the claims he had made in his own research, Gofman in his introduction of Yaroshinskaya's text called for independent research to be carried out on the health effects of radiation. He considered the current research policies – which were governed by '*a market eager for medical-unknowledge in the field of health consequences from nuclear (and other) pollutants,*'[822] – to be characterized by the same dynamics that Yaroshinskaya had uncovered with regard to the Chernobyl accident: '*In lavish sponsorship of scientists, engineers and physicians in innumerable institutions worldwide (including many halls of academe), the governments have a wish-list for the outcome of radiation research (into Chernobyl for instance). […] Best of all would be the finding that a little*

[818] David Marples, *Belarus: from Soviet rule to nuclear catastrophe* (Basingstoke: Macmillan, 1996).
[819] Alla Yaroshinskaya, *Chernobyl: the forbidden truth* (Oxford: Jon Carpenter, 1994).
[820] Yarochinskaya, *Tchernobyl, vérité interdite*. In 2004, the editors of *Les silences de Tchernobyl* included an article by Yaroshinskaya in their compilation. In Germany, her statements became known to a wider audience in particular through the special edition of the journal *Osteuropa*, which appeared on the occasion of the accident's 20th anniversary and which included an article by Yaroshinskaya: Alla Jarošinskaja, "Lüge-86. Die geheimen Tschernobyl-Dokumente." In *Tschernobyl: Vermächtnis und Verpflichtung*, ed. by Sahm/Sapper/Weichsel, p. 39-56.
[821] Yaroshinskaya, *Chernobyl*, p. 123.
[822] Ibid., p. 2.

extra radiation improves human health.'[823]

Vladimir Chernousenko

A somewhat similar argument that the true health effects of Chernobyl had been systematically covered up in order to protect the international nuclear industry was brought forward by Vladimir Chernousenko. Chernousenko had been to Chernobyl several times after 1986 in relation to his scientific work for the Ukrainian Academy of Sciences. In his book *Chernobyl – Insight from the inside*, which was published in 1991 by *Springer*, Chernousenko aimed to debunk 21 'myths of Chernobyl.'[824] These myths included, for instance, the following statements: '*The design of the RBMK-1000 reactor is impeccable. It was the operating staff that caused the explosion*'; '*Only 31 people died as a result of the accident and the clean-up operations*'; or '*The doses which people have received while living in contaminated areas will not have genetic effects.*'[825] All in all, the entire list of the myths could be equated with the statements produced in the early IAEA reports. By working with a broad selection of what were at the time mostly unpublished material and interviews with eyewitnesses and people living in the most affected areas, Chernousenko aimed to deconstruct these myths. In his account, he especially focused on the health effects in the most affected areas, which he described to be devastating: '*There are practically no healthy children in any of the towns or settlements there. The appearance of ambulances on school grounds is a common sight. Children faint from weakness right in the classroom*.'[826] To underpin this argument, he quoted the *Union of Chernobyl Liquidators*: according to them there were between 650,000 to 1,000,000 'liquidators' whose radiation related illnesses were being denied and negated. From his point of view, people had very good reason to be afraid: '*Is it any wonder that these "radiophobic" people think a crime was committed by those who made the negligent decision to suppress important, truthful information*.'[827] What is particularly interesting about Chernousenko's account is the fact that he did not limit the Chernobyl health effects to cancer. In the chapter '*Doctor, will I live?*', he presented an entire list of illnesses observed in children including diseases of the liver, nose, and throat as well as birth defects. The health conditions of adults were not described as being any better: They suffered gastritis, colitis, various swellings, problems with the cardiovascular system, etc.[828] Chernousenko did not explicitly argue that these various illnesses were induced directly by radiation. But from his

[823] Ibid., pp. 3.
[824] Vladimir Mikhailovich Chernousenko, *Chernobyl: insight from the inside* (Berlin/London: Springer, 1991).
[825] Ibid., pp. ix.
[826] Ibid., p. 39.
[827] Ibid., p. 171.
[828] Ibid., p. 217.

narrative, only one, minute step was needed to establish this link; as had been done by Belarusian doctors, Nesterenko and Bandazhevsky.

3.1.2 Yuri Bandazhevsky and Vassily Nesterenko

Yuri Bandazhevsky

Yuri Bandazhevsky is a Belarusian doctor who worked in one of the country's most heavily contaminated regions and, on his own initiative, carried out research on the relationship between the constant exposure of the children to radionuclides in their food and their many illnesses, in particular respiratory and cardiovascular diseases. In 1999, Bandazhevsky was arrested on charges of corruption. Global protests against his arrest ensued, both by human rights organizations such as *Amnesty International* and anti-nuclear organizations. In 2005, Bandazhevsky was finally released on parole. He went to France, where he planned to continue his research in cooperation with the CRIIRAD[829] and with the financial aid of a stipend provided by the *Conseil régional d'Auvergne*. It was the campaign carried out by the CRIIRAD that made Bandazhevsky known in France and led to his official support, which was given in the form of the conferral of honorary citizenship on Bandazhevsky by several French cities. For example, Noël Mamère – a well-known French TV presenter and journalist, who stepped away from his media career to pursue a political career with *Les Verts* – in his function as major of Bègles, conferred on Bandazhevsky the position of honorary citizen of Bègles in 2009. Mamère had been involved in a longstanding legal fight with Pierre Pellerin and therefore was very personally close to the Chernobyl debate.[830]

Bandazhevsky's work was already widely known in France before his connection to this country was further strengthened by his move to the country upon his release from prison. Bandazhevsky's study results and imprisonment were prominent arguments used in the narratives put forth by the anti-nuclear side of the French Chernobyl debate, and particularly in those released by the CRIIRAD. Other actors of the French Chernobyl debate also took action to spread information about his work and what had happened to him. For instance, in 2004, Frédérick Lemarchand and Guillaume Grandazzi dedicated two articles of their book *Les silences de Tchernobyl* to Bandazhevsky and his work, one of which was written by Bandazhevsky's wife Galina.[831] References to Bandazhevsky's work underpinned Lemarchand's and Grandazzi's argument

[829] For CRIIRAD's commitment to support Bandazhevsky after his release from prison, see for instance: CRIIRAD, *Trait d'Union. Bulletin d'information des adhérents de la CRIIRAD*, No 32/33 (2005).

[830] For these trials, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 114.

[831] Galina Bandajevskaya, "Comment on a réduit au silence le professor Youri Bandajevski." In *Les silences de Tchernobyl*, 2004, ed. by Grandazzi and Lemarchand, p. 101-105; Maryvonne David-Jougneau, "Semmelweis,

that in the most affected areas the health effects of the radioactive fallout were much stronger than had been proclaimed by international expert groups.

In the same respect, Bandazhevsky and his work – insofar as they were counter example to the official evaluations and proof of the 'apocalyptic' effects of the accident – figured in almost every publication that was written by critical voices of the French Chernobyl debate on the occasion of the 20th anniversary: For instance, Wladimir Tchertkoff elaborated on Bandazhevsky's (and Nesterenko's) work in the context of his account on the '*global campaign for the denial of the Chernobyl victims*,'[832] and Stéphane Lhomme referred to Bandazhevsky in his contemplations on the role that the French nuclear sector had played in keeping Belarusian physicians from publishing their work on the 'true impact' of Chernobyl: '*without surprise, this unjustified imprisonment does not keep the French from collaborating with the Belarusian powers.*'[833] To show his support, Stéphane Lhomme was also present when Noël Mamère made Bandazhevsky honorary citizen of Bègles. In addition to Wladimir Tchertkoff and Stéphane Lhomme, there were also many other French authors who referred to Bandazhevsky in their 2006-publications: In his book *Atomic Park. À la recherche des victimes du nucléaire* Jean-Phillipe Desbordes presented the trial against Bandazhevsky as an archetype of the denial of the victims of the nuclear age.[834] In her graphic novel *Tchernobyl mon amour*, Chantal Montellier also included a reference to Bandazhevsky: At one point, the main character of the graphic novel – the young journalist Chris – mediates on the people who fought to reveal the truth about Chernobyl's health effects. Chris' speech balloon says: '*It was not only the 4th reactor that was choked, they also wanted to choke the truth. Those who spoke about the consequences of the catastrophe, such as the doctor and scientist Yuri Bandazhevsky or the writer Svetlana Alexievitch with her extraordinary book 'La Supplication' were condemned to prison, to relegation and exile.*'[835] On the same page, Montellier inserted drawn portraits of Alexievich and Bandazhevsky. Alexievich's speech balloon consists of a quote from *La Supplication*, and Bandazhevsky's speech balloon says: '*They arrested me for a ridiculous story of a bribe. But in reality it is my research that disturbs them*.'[836] And even the historian Nicolas Werth, in his article on Chernobyl that was published in the popular science magazine *L'Histoire,* referred to Bandazhevsky stating that, in addition to thyroid cancers, various radiation-induced illnesses had

Bandajevsky: des savants victimes de la répression scientifique." In: ibid., p. 106-118.

832 Tchertkoff, *Le crime de Tchernobyl*, pp. 349.

833 Lhomme, *L'insécurité nucléaire*, p. 194: '*Sans surprise, cet injustifiable emprisonnement n'empêche pas les Français à collaborer avec le pouvoir biélorusse.*'

834 Desbordes, *Atomic Park*, pp. 279.

835 Montellier, *Tchernobyl mon amour*, p. 29: '*On n'a pas seulement essayé d'étouffer le quatrième réacteur, on a aussi voulu étouffer la vérité. Ceux qui ont parlé des conséquences de la catastrophe, comme le savant Youri Bandajevsky où l'écrivain Svetlana Alexiévitch, avec son extraordinaire livre 'La supplication' ont été condamnés à la prison, la relégation et l'exil.*'

836 Ibid.: '*Ils m'ont arrêté pour une ridicule histoire de pots-de-vin. En réalité, mes recherches dérangent.*'

been verified in children.[837]

But Bandazhevsky's role in the French Chernobyl debate in 2006 was not just a passive one in terms of others referencing his work. He himself contributed actively to this debate. On the occasion of the 20th anniversary, his book *La philosophie de ma vie: journal de prison* was published in France.[838] This book was not a scholarly piece but a personal log from his time in prison that was accompanied by several scientific papers and an autobiography. The cover design of the book consisted in a red bar running across the cover on which a white inscription read: '*Tchernobyl: 20 ans après*'. The book included a preface written by Bandazhevsky's wife, Galina. In her preface, Galina Bandajevskaya made clear that their fight did not concern only the health effects of Chernobyl but was also directed against the threats posed by the nuclear industry as such: '*I hope that this book sparks the interest of a large group of readers sensitive to the problems of Chernobyl. That it will help them to understand the people who fight against the nuclear menace that weights on our planet*.'[839] The summary of the book printed on the back cover declared Bandazhevsky's work to be '*the scientific proof of the radioactive contamination of Chernobyl*.'[840] Amongst the people in France who had already long held a critical stance towards the official evaluations of Chernobyl, Bandazhevsky's book was received as precisely this: the 'scientific proof' corroborating their criticisms. In addition to this circle of people, Bandazhevsky's book was extensively covered in media reporting on Chernobyl on the occasion of the 20th anniversary: many newspapers published reviews of the book or listed it as a reading suggestion, and *Radio France Culture* broadcasted an interview with Bandazhevsky. But *La philosophie de ma vie* was not the only book written by Bandazhevsky that appeared in France; *Tchernobyl 25 ans après*,[841] *Les Conséquences de Tchernobyl sur la natalité*,[842] and *Les Conséquences de Tchernobyl sur la santé*[843] soon followed.

On the other side of the Channel, however, neither Yuri Bandazhevsky's work nor his imprisonment played a role in the British Chernobyl debate. The only account on Bandazhevsky's work that I could find in all of the material I looked through on the British case was a single newspaper article published in 2006. Furthermore, his books have not been translated into English.

---

837 Nicolas Werth, "Tchernobyl: enquête sur une catastrophe annoncée," in *L'Histoire*, 308 (4:2006), p. 75.

838 Youri I. Bandazhevsky, *La philosophie de ma vie: journal de prison* (traduit du russe par Manuela Büx) (Paris: Jean-Claude Gawsewitch Éditeur, 2006).

839 Ibid., p. 15: '*J'espère que ce livre suscitera l'intérêt d'un vaste cercle de lecteurs sensibles aux problèmes de Tchernobyl. Qu'il puisse aider à comprendre ces gens qui se battent contre la menace nucléaire qui pèse sur la planète.*'

840 Ibid., back of book: '*la preuve scientifique de la contamination radioactive de Tchernobyl.*'

841 Youri I. Bandazhevsky et al., *Tchernobyl 25 an après. Situation démographique et problèmes de santé dans les territoires contaminés* (Gap: Éditions Yves Michel, 2011).

842 Youri I. Bandazhevsky and N. F. Dubovaya, Les conséquences de Tchernobyl sur la natalité. Césium radioactif et processus de reproduction (Gap: Éditions Yves Michel, 2012).

843 Youri I. Bandazhevsky and Galina S. Bandajevskaya, *Les Conséquences de Tchernobyl sur la santé. Le système cardiovasculaire et l'incorporation de radionucléides Cs-137* (Gap: Éditions Yves Michel, 2012).

The very different reception of his work in these two national contexts is very apparent in another regard: The French Wikipedia article of 2013 was roughly three times as long as the English one.

Vassily Nesterenko

Alongside Yuri Bandazhevsky, there is another Belarusian doctor who profoundly influenced the debate on the health effects of Chernobyl: Vassily Nesterenko. Vassily Nesterenko, who died in 2008, was the founder of the private Belarusian radiation protection institute *Belrad*. Belrad has, among other things, provided citizens in the most affected areas with facilities to measure the radioactivity present in their food and trainings to learn on how to reduce their exposure. It also developed the highly contested pectin pills, which are used to reduce the radioactivity levels in children. In France, it was mainly the group *Entfants de Tchernobyl Bélarus* (ETB) that promoted Belrad's and Nesterenko's work.[844] In this regard, it is not surprising that Wladimir Tchertkoff's *Le crime de Tchernobyl* included an account on Nesterenko, given that Tchertkoff was a founding member of the ETB. Beyond the immediate circle of people linked to the ETB, however, Nesterenko has been far less present in the French Chernobyl debate than Bandazhevsky. Nonetheless, one of Nesterenko's articles was included in the compendium *Les silences de Tchernobyl* edited by Frédérick Lemarchand and Guillaume Grandazzi. The central premise of the article stressed that the Chernobyl accident had been close to causing a nuclear reaction similar to that of an atomic bomb and thus could have rendered all of Europe uninhabitable.[845] Aside from this article, however, no further articles by Nesterenko have been published in French.[846]

Throughout the English-speaking world, however, Vassily Nesterenko and his son Alexey Nesterenko's publications are widely known. In particular, a book published in 2009 through the *New York Academy of Science* has become an important reference in the transnational Chernobyl debate – for the anti-nuclear as well as the pro-nuclear side.[847] For the anti-nuclear side, *Chernobyl:*

---

[844] The ETB has also supported the work of the Bandazhevskys, for instance lately by collecting money among ETB-members for Galina and her daughters, see: ETB, *Compte rendu de l'Assemblée Générale Ordinaire du 17 novembre 2012*. More information on ETB is in chapter 2.2.5.

[845] Vassilli Nesterenko, "L'Europe aurait pu devenir inhabitable." In *Les silences de Tchernobyl*, 2004, ed. by Grandazzi and Lemarchand, p. 14-27.

[846] In the case of Germany, an article by Vassily Nesterenko was included in the 2006 special edition of *Osteuropa*: Vasilij Nesterenko, "Mauern der Ignoranz. Protokoll einer Katastrophe." In *Tschernobyl: Vermächtnis und Verpflichtung*, ed. by Sahm/Sapper/Weichsel, p. 27-38. An article by Guillaume Grandazzi was included in this special edition as well. It is very interesting to see how the French and German Chernobyl debates were connected in this special edition and how, at the same time, this publication reflects the transnationality of the Chernobyl debate. In this regard, this volume also included an article by David Marples.

[847] Alexey Yablokov, Vassily B. Nesterenko, Alexey V. Nesterenko, *Chernobyl: consequences of the catastrophe for people and the environment* (Boston: Blackwell Publisher on behalf of the New York Academy of Sciences, 2009). In Germany, the book has been made available through the website '*Strahlentelex*': http://www.strahlentelex.de/Yablokov_Chernobyl_book.pdf (last accessed: 15 November 2013).

consequences of the catastrophe for people and the environment – to which I refer in the following paragraphs as the *Yablokov-Nesterenko Report* – is the long overdue scientific proof that the official reports on Chernobyl's impact and their explanatory pattern of 'radiophobia' are erroneous and that the various and severe health effects of the radioactive fallout are indeed observable. The pro-nuclear side, however, believes that this publication just proves that there is no valid scientific argument that is capable of underpinning the apocalyptic Chernobyl narratives. In this controversy over the book, the very fact that it was included in the *Annals of the New York Academy of Science* became a political issue in and of itself. While the anti-nuclear side referred to this fact as confirmation of the scientific value of this book, the pro-nuclear side ferociously attacked the Academy for undermining scientific standards. *Chernobyl: consequences of the catastrophe for people and the environment* caused such heated debate that the New York Academy of Science felt obliged to distance itself from this publication. On its website on the page it lists its publications, the Academy included the disclaimer: '*In no sense did Annals of the New York Academy of Sciences or the New York Academy of Sciences commission this work; nor by its publication does the Academy validate the claims made in the original Slavic language publications cited in the translated papers. Importantly, the translated volume has not been formally peer-reviewed by the New York Academy of Sciences or by anyone else. Under the editorial practices of Annals at the time, some projects, such as the Chernobyl translation, were developed and accepted solely to fulfill the Academy's broad mandate of providing an open forum for discussion of scientific questions, rather than to present original scientific studies or Academy positions. The content of these projects, conceived as one-off book projects, were not vetted by standard peer review*.'[848]

As Susanne Bauer emphasized in her work, '*the debates raised in this controversy were symptomatic of the different modes of health research and conflicts over "design issues" in epidemiological research.*'[849] These conflicts over 'design issues' derived from the fact that '*Soviet, post-Soviet and western ways of doing research and documentation differed in their standards and protocols. In Soviet radiation epidemiology, mostly ecological (area comparisons) were used, while international protocols insisted on certain study designs, statistical tests for significance, specific baseline data and dose-response-relationship as criteria for proof of radiation effects.*'[850] These different ways of 'doing' science surfaced and clashed in the controversy over the Yablokov-Nesterenko Report since the papers in this publication had obtained their results mainly from ecological studies into the numbers of cases observed of specific illnesses as well as area

[848] New York Academy of Science: http://www.nyas.org/publications/annals/Detail.aspx?cid=f3f3bd16-51ba-4d7b-a086-753f44b3bfc1 (last accessed: 15 November 2013).
[849] Bauer/Kalmbach/Kasperski, *From Pripyat to Paris*.
[850] Ibid.

comparisons. This method differed from what the critics of the Yablokov-Nesterenko Report have considered to be valid scientific method: '*In environmental epidemiology, which is based on observational rather than experimental approaches, methodological superiority is attributed to "quasi-experimental designs", i.e. cohort studies, followed by case-control studies. […] In this system, the study designs mostly used by Soviet researchers (ecological or area comparisons) count only as descriptive and hypothesis-generating.*'[851]

In addition to being an archetypal example of the scientific disputes that are characteristic of the Chernobyl debate, the Yablokov-Nesterenko Report is also an archetypal example of the scientific foundation of the apocalyptic Chernobyl narrative. The objective of the report was to prove that the apocalyptic situation that Chernobyl activists like Alexievich had outlined through personal life stories is not a truth that applies to only some individuals but is in fact the reality for all of the people living in the most affected areas. The book's foreword clearly stated that the impact of the radioactive fallout is in no way limited to these areas alone: '*More than 22 years have passed since the Chernobyl catastrophe burst upon and changed our world. In just a few days, the air, natural waters, flowers, trees, woods, rivers, and seas turned to potential sources of danger to people, as radioactive substances emitted by the destroyed reactor fell upon all life. Throughout the Northern Hemisphere radioactivity covered most living spaces and became a source of potential harm for all living things.*'[852] The introduction, also, opened with a similar apocalyptic narrative of the accident: '*For millions of people on this planet, the explosion of the fourth reactor of the Chernobyl nuclear power plant on April 26, 1986 divided life into two parts: before and after. […] Chernobyl has become synonymous with human suffering and has brought new words into our lives – Chernobyl liquidators, children of Chernobyl, Chernobyl AIDs, Chernobyl contamination, Chernobyl heart, Chernobyl dust, and Chernobyl collar (thyroid disease), etc. For the past 23 years it has been clear that there is a danger greater than nuclear weapons concealed within nuclear power. Emissions from this one reactor exceeded a hundredfold the radioactive contamination of the bombs dropped on Hiroshima and Nagasaki. No citizen of any country can be assured that he or she can be protected from radioactive contamination. One nuclear reactor can pollute half the globe. Chernobyl fallout covered the entire Northern Hemisphere.*'[853]

The results of the studies that Yablokov and the Nesterenkos presented in this volume had mostly been published already in Slavic languages. From the editors' point of view, non-English publications had not been considered enough in the official evaluations of the international experts. In particular, the evaluation provided by the Chernobyl Forum lacked this perspective entirely. As

[851] Ibid.
[852] Yablokov/Nesterenko/Nesterenko, *Chernobyl*, p. vii.
[853] Ibid., p. 1.

the editors stated themselves, '*the principal idea behind this volume is to present, in a brief and systematic form, the results from researchers who observed and documented the consequences of the Chernobyl catastrophe. In our view, the need for such an analysis became especially important after September 2005 when the IAEA and the WHO presented and widely advertised "The Chernobyl Forum" report because it lacked sufficiently detailed facts concerning the consequences of the disaster.*'[854]

Although the report was mostly concerned with Chernobyl health effects in Eastern Europe, it addressed other regions as well. Interestingly, on several occasions, Britain was used as the example of an affected region in Western Europe – thus, the authors chose a country where debate on self-affectedness almost did not exist. This appears to be less surprising when the fact that, in 2006, Yablokov and Chris Busby had jointly edited the book *Chernobyl 20 years on* is taken into consideration.[855] A likely consequence of this cooperation was that the Yablokov-Nesterenko Report gave quite a bit of space to Busby's studies. For instance, the report stated that '*in Wales, one of the regions most heavily contaminated by Chernobyl fallout, abnormally low birth weights (less than 1,500 g) were noted in 1986–87.*'[856] In addition – in reference to a study by Busby and Scott Cato – the Yablokov-Nesterenko Report stated that there had been an increase in leukaemia in infants in Wales and Scotland, and it quoted Busby on his declaration that '*a significant increase in perinatal mortality occurred in March 1987, some 10 months after the catastrophe in the three most contaminated counties of England and Wales: Cumbria, Clwyd and Gwynedd*.'[857] Alongside Busby's work, the report also included another study on the health effects of Chernobyl in Britain in order to provide perspective on the vast geographical impact of the fallout: '*Thyroid cancer in children and young adults in the North of England. Is increasing incidence related to the Chernobyl accident?*', which was published in 2001 by Cotterill, Pearce and Parker in the *European Journal of Cancer*.[858] In the abstract to this article, the authors had summarized their findings as follows: '*Regression models showed a significant increase in the incidence of thyroid cancer after the Chernobyl accident (P=0.002). In Cumbria, the area receiving the heaviest fallout in the UK, the increase in incidence was much greater (rate ratio 12.19, 95% CI 1.5–101.2). These temporal and spatial changes in incidence are consistent with a causal association with the Chernobyl accident although a greater effect in the younger rather than the older age group would have been anticipated. However, factors including improvements in ascertainment and earlier detection of tumours may*

[854] Ibid., p. x.
[855] Busby and Yablokov, *Chernobyl 20 years on*.
[856] Yablokov/Nesterenko/Nesterenko, *Chernobyl*, p. 50.
[857] Ibid., p.195.
[858] S. J. Cotterill, M. S. Pearce, L. Parker, "Thyroid cancer in children and young adults in the North of England. Is increasing incidence related to the Chernobyl accident?" in *European Journal of Cancer* 37 (8, 2001): 1020-1026.

also have contributed to the increasing incidence.'[859] It is an interesting finding that this study seems to have played a more important role in the transnational Chernobyl debate than in the British one. Although with regard to the British debate, I did not come across any reference to this study in either newspaper reports or in British Chernobyl literature – not even in Busby and Yablokov's 2006 book – I did encounter one such reference in a German Chernobyl publication. The 2001 report *Health effects of Chernobyl*, published by the German branch of IPPNW together with Sebastian Pflugbeil's *Gesellschaft für Strahlenschutz*, made reference to this study in its chapter on '*Thyroid cancer and other thyroid diseases*'.[860]

In terms of the national and transnational reception of these studies, there is another interesting finding: Although Britain figured prominently in the Yablokov-Nesterenko Report, the report itself was barely received in British public discourse, as was the Nesterenkos' work as such. However, this changed slightly after the events at the Fukushima plant. In this regard, it is worth having a closer look at two articles that George Monbiot published in April and November 2011 on his blog. In his article of November 2011,[861] Monbiot harshly attacked Chris Busby and his work. Monbiot's outburst was triggered when Busby earlier that month proclaimed in a video blog that the Japanese government was spreading radioactivity around the country in order to cover up the health effects of the Fukushima accident. Busby had stated that by contaminating all of Japan, the government would be able to ensure that no increases in illnesses in the Fukushima region could be ever found to be statistically significant. Furthermore, he proclaimed that by increasing intake of calcium and magnesium, the human body could block the impact of radionuclides. In addition to these statements, a US-based website began to sell highly overpriced calcium and magnesium pills under the name of Christopher Busby. Busby, in a statement that he posted on his website the day after Monbiot's blog entry, confirmed that the US-based website had been set up with his consent, but he refuted receiving any financial benefits for himself from the proceeds of the sale of these items.[862] It is not my intention to discuss here the possible agency of these pills or the ethic implications implied in carrying out such business. What I am interested in are the reactions that

[859] Ibid., p. 1020.

[860] German Affiliate of International Physicians for the Prevention of Nuclear War (IPPNW) / Gesellschaft für Strahlenschutz, *Health effects of Chernobyl. 25 years after the reactor catastrophe* (Berlin: IPPNW / Gesellschaft für Strahlenschutz, April 2011), p. 51. An online version is at: http://www.ratical.org/radiation/Chernobyl/HEofC25yrsAC.html (last accessed: 15 November 2013).

[861] George Monbiot, "How the Greens were misled," 22 November 2011: http://www.monbiot.com/2011/11/22/how-the-greens-were-misled/ (last accessed: 15 November 2013).

[862] Chris Busby, "A personal statement by Chris Busby. Fukushima, Calcium Supplements, the Christopher Busby Foundation for the Children of Fukushima, George Monbiot et al: The Real Target; the Real Strategy," 23 November 2011: http://llrc.org/epidemiology/subtopic/monbiot21nov2011.htm. On the webpage of this statement, Busby included a link to a youtube video in which he performs his song 'News Paper Man'. Although he does not mention Monbiot's name, the song is clearly dedicated to him: http://www.youtube.com/watch?v=hKBusvfq0eM (last accessed: 15 November 2013).

these activities elicited, activities that George Monbiot had 'disclosed' to the public. It was no coincidence that George Monbiot is the individual who got interested in this story and prominently promoted it on his blog. Monbiot is a British journalist who has worked for years for the BBC and who became known not just because of his investigative documentaries on health and environmental issues but also through his books, mainly on climate change. In the last few years, the topic of climate change has become his most important field of activism – and in this regard, he has become a declared campaigner for and supporter of nuclear power; he is known throughout the English-speaking world, and fights in favour of the 'green atom' in order to save the world.[863] To foster his claims, Monbiot strongly attacked the anti-nuclear movement, proclaiming that these activists were consciously promulgating incorrect information in order to incite fear of radioactivity in the people. In his article of April 2011, Monbiot clearly explained his viewpoint: '*Over the past fortnight I've made a deeply troubling discovery. The anti-nuclear movement to which I once belonged has misled the world about the impacts of radiation on human health. The claims we have made are ungrounded in science, unsupportable when challenged and wildly wrong. We have done other people, and ourselves, a terrible disservice.*'[864] He based his argument mainly on the debate over the health impact of Chernobyl and stated that: '*For the past 25 years, anti-nuclear campaigners have been racking up the figures for deaths and diseases caused by the Chernobyl disaster, and parading deformed babies like a mediaeval circus. They now claim that 985,000 people have been killed by Chernobyl, and that it will continue to slaughter people for generations to come. These claims are false*.'[865] As the most obvious example of the degree to which the claims by anti-nuclear campaigners were scientifically unfounded, Monbiot made reference to the book discussed above: *Chernobyl: Consequences of the Catastrophe for People and the Environment*, i.e. the book in which Busby's studies had figured prominently. In his statement, which was released on the occasion of the 25th Chernobyl anniversary, Monbiot drew a parallel between these authors and a group of people he had made out to be today's worst criminals: the 'climate change deniers'. This parallel was described as follows: '*Failing to provide sources, refuting data with anecdote, cherry-picking studies, scorning the scientific consensus, invoking a cover-up to explain it: all this is horribly familiar. These are the habits of climate change deniers, against which the green movement has struggled valiantly, calling science to its aid. It is distressing to discover that when*

[863] See in this regard the open letter that Monbiot wrote together with Stephen Tindale, Fred Pearce, Michael Hanlon and Mark Lynas to Prime Minster David Cameron in March 2012: http://www.monbiot.com/2012/03/15/a-letter-to-david-cameron/ (last accessed: 15 November 2013).

[864] George Monbiot, "Evidence Meltdown," 4 April 2011: http://www.monbiot.com/2011/04/04/evidence-meltdown/ (last accessed: 15 November 2013).

[865] Ibid.

the facts don't suit them, members of this movement resort to the follies they have denounced.'[866]

Thus, the fact that Monbiot disclosed the story about Busby's pill-selling activities is by no means a coincidence. Instead, these blog posts in November 2011 reflect the personal power struggle between two persons, each of whom believes the other to be the incarnation of evil. Both men are equally convinced that the 'scientific facts' they believe in are the absolute 'truth', and therefore neither has left any room to consider the potential validity of the other's opinion. Both have elevated their convictions to the level of a theory by which they categorically explain and divide the world into good and bad.

Undoubtedly, it could be argued that one does not need Monbiot's convictions to be stunned about Busby's promotion of pharmaceuticals. But, again, it is very useful to take a step back and apply a comparative look. In France, the Chernobyl solidarity movement group the ETB has been collecting money for years so that children in Belarus may be provided with pectin pills. It is highly debated whether pectin really 'absorbs' the radionuclides in children's bodies, as is proclaimed by the founder of the private radiation protection institute Belrad, Vassily Nesterenko and his son Alexey, who is the current director of this institute. The fact that Belrad produces these pills through a French pharmaceutical factory, sells them directly, and also urges people who are active in the solidarity movement to buy these pills and give them to the 'Chernobyl children' during their stays abroad, has been widely criticized. Nevertheless, this fact has never attracted any further public attention in France or led to wider critical reporting in newspapers. Comparing this situation to the British 'Busby scandal' becomes even more interesting if we take into consideration that the founding members of the ETB are – alongside the prominent Swiss anti-nuclear activist Michel Fernex – Vassily Nesterenko, Galia Ackerman and Wladimir Tchertkoff, i.e. the founder of Belrad and two central figures of the French Chernobyl debate.

As is made clear by this account on Bandazhevsky and the Nesterenkos, the scientific basis of the 'radiophobic' narrative is not the only one that spread through global networks. The scientific basis of the apocalyptic narrative is also transmitted through global networks; it actually travels through the same networks that call into question the scientific basis upon which the 'radiophobic' narrative is built. These networks will be discussed further in the sub-chapter on the debate on the WHO-IAEA Agreement (3.3.3) given that this agreement is considered by a growing number of activists to be the reason why the 'radiophobic' narrative continues to be the dominant narrative within scientific circles despite the efforts of individuals like Bandazhevsky and the Nesterenkos to bring the 'apocalyptic' dimension of the accident to light. The *International Chernobyl Project* and the *Chernobyl Forum* may be described as 'lighthouses' that disseminated the 'radiophobic'

[866] Ibid.

narrative; such 'lighthouses' also exist with regard to the apocalyptic narrative. Among them are Greenpeace International, IPPNW, and the *European Committee on Radiation Risk* (ECRR), this last of which connects in particular the British, German, and Eastern European Chernobyl debates through individuals like Chris Busby, Inge Schmitz-Feuerhake, and Alexey Yablokov. This is not an attempt to place these two competing networks on the same level with regard to their (discursive) power. On the one side, i.e. that of the promoters of the 'radiophobic' narrative, the members of scientific and political elites, because of their status, have access to financial funds and have strong (discursive) power with regard to shaping official evaluations and influencing political decision-making. On the other side, i.e. that of the promoters of an apocalyptic narrative, many of the individuals involved are not members of scientific and political elites and therefore their access to financial funds is more difficult. At the same time, their (discursive) power with regard to shaping official evaluations and influencing political decision-making is rather limited; this is a result of their self-identification as opponents to the established elites. When these power hierarchies are compared, it is possible to see that, despite its comparatively limited power, the network that promotes the apocalyptic narrative has succeeded in deeply influencing public debate and how Chernobyl is represented. Depending on the different national context, the level of success of the proponents of this 'alternative' or apocalyptic narrative can vary drastically: in Germany and France these actors were successful in shaping public debate and how Chernobyl was represented, but in Britain they did not have much success at all. In order to understand the transnational sphere of the Chernobyl debate, it is crucial to have a clear understanding of this network of actors. This knowledge and understanding prove to be extremely important when trying to comprehend reactions toward the Fukushima accident as well, given that in the debate on Fukushima health effects the same issues are at stake and therefore the same actors are involved as in the Chernobyl debate.

3.1.3 Svetlana Alexievich

But science-based counter narratives provided by (former) Soviet Union citizens are not the only elements to have deeply influenced Chernobyl debates in many countries. In addition, there is one book that was attributed particular importance from a transnational perspective: Svetlana Alexievich's *Voices from Chernobyl.*[867] Originally published in Russian in 1997 under the title

[867] This paragraph is an extract of my article: Kalmbach, *Chernobyl as a National and Transnational Site of Memory*, pp. 142.

Chernobyl'skaia molitva, it was translated into Swedish and German directly in that same year. Translations into Japanese, English, Chinese, and Spanish, among other languages, soon followed. The book continues to be reprinted today. In *Voices from Chernobyl,* Alexievich gave a voice to the 'victims of Chernobyl' from the contaminated regions in Eastern Europe – people who were evacuated in 1986, family members of deceased 'liquidators', sick patients and their families, and people who have returned to their evacuated villages, as well as those who moved to these regions because they considered them safer than their homelands. Their stories were expressed in the form of monologues – sometimes nine to ten pages long, sometimes only half a page – without editorial commentary. The book is anything but easy reading: The monologues describe the suffering of the Chernobyl victims in great detail, enabling readers to visualize, for instance, the skin peeling off of the irradiated body of a firefighter when his wife talks about his time in hospital. Although Alexievich claimed to have simply recorded eyewitness reports, she in fact heavily edited the interviews and combined them into a coherent narrative of incredible intensity. The book's worldwide success is to a large degree due to the artistic quality of the narrative. It has been a source of inspiration for a number of artists: theatre groups in particular have found the texts suitable for stage adaptation.[868] However, *Voices from Chernobyl* is generally read as a documentation of the situation around Chernobyl rather than a literary creation. As a result, quotations from the book have frequently been used as captions or explanatory texts in other books and exhibits.[869] *Voices from Chernobyl* has come to be the prime example of narrations that portray Chernobyl as an apocalypse – the French translation even incorporates the word 'apocalypse' into its title: *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse.* Thus the book has become a model and reference point for narratives on the 'true' effects of the accident, narratives that aim to bring visibility to the suffering that has been disguised and even negated by the 'radiophobia' concept of the official reports.

With regard to differences in the reception of 'foreign' Chernobyl narratives in the various national contexts, the difference in the way Alexievich's book was received in France and Britain is a particularly striking example. In France, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* had a tremendous amount of success and its impact was significant.[870] Published in France in 1998, this release coincided with the growing interest in Chernobyl health effects in France itself that had seen as strong increase not only in intensity but also in its diffusion after 1996.

---

[868] For adaptations in France, see: Virginie Symaniec, "Mettre en scène La Supplication: du déni de la réalité au rejet de la représentation." In *Les silences de Tchernobyl,* 2004, ed. by Grandazzi and Lemarchand, pp. 178.

[869] See for example the children's book by Paul Dowswell, *The Chernobyl Disaster: 26th April 1986* (London: Hodder Wayland, 2003), p. 27 and 37; or the traveling exhibition of the Internationales Bildungs- und Begegnungswerk, '*25 Jahre nach Tschernobyl'.*

[870] This paragraph is an adaption of the respective account in: Kalmbach, *Tschernobyl und Frankreich*, pp. 123.

Thus, just weeks after the initial publication was released by the publishing house *JC Lattès*,[871] the book was re-printed and promoted through the French book clubs *France Loisir*[872] and *Le Club*.[873] The latter even incorporated it into its series *Le Grand Livre Du Mois*. Already by the next year, the first paper-back edition had been edited and released by the publishing house *J'ai lu*.[874] Alexievich's book was translated into French by Galia Ackerman, who had dedicated a great deal of time and energy to finding a publishing house for the French edition and, after its publication, had accompanied Alexievich on the promotion tour through France. In an interview in 2007, Galia Ackerman admitted to me that it had been very difficult to find a publisher. However, after the initial publication, *La Supplication* very quickly gained momentum and came to hold a prominent place in the French Chernobyl debate. From its numerous reprints to the adaptation of the text as a play to countless quotations in almost every text that French critical voices have written on Chernobyl, *La supplication* has become the incarnation of the counter narrative to the 'official story' that was provided by French public authorities, with regard to the health effects of the accident in Eastern Europe and in France alike. Jean-Michel Jacquemin probably expressed this connection most obviously: the main chapter of his 2001 book consisted of 3 to 4 page-long life stories of individual 'French Chernobyl victims' and carried the title '*Les témoignages des malades – La supplication des Français*.'[875]

In France, the success of Alexievich's book not only paved the way for the publication of numerous other books and film documentaries on the situation in the contaminated areas around Chernobyl, it also created the basis upon which developed a strong sense of French solidarity for the detained Belarusian doctor Yuri Bandazhevsky, who after his release from prison moved to France where CRIIRAD provided him with space in their laboratory. The success of Alexievich's book and the solidarity with Bandazhevsky was not unique to France but also occurred in other countries. But in France the echo was particularly resonant. This extremely positive receptive response might be explained by the fact that many people in France perceived that they shared a 'common destiny' with the people in the most affected areas in Eastern Europe. This perception was based on the assumption that in both cases the public authorities were lying to the people about the true extent of the health risks and effects and were denying the existence of their illnesses, of which the children suffered the most, and those who attempted to speak the truth were actively discredited

[871] Svetlana Alexievitch, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (traduit du russe par Galia Ackerman et Pierre Lorrain) (Paris: JC Lattès, 1998).
[872] Svetlana Alexievitch, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (Paris: France Loisir, 1998).
[873] Svetlana Alexievitch, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (Paris: Le Club, 1999).
[874] Svetlana Alexievitch, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (Paris: Éditions J'ai lu, 1999).
[875] Jacquemin-Raffestin, *Tchernobyl: Aujourd'hui les Français malades*.

by the authorities who accused them of being unreliable and unknowledgeable.

The central role *La supplication* obtained in the French Chernobyl debate becomes obvious first and foremost in the way in which the book has served as a major reference in various subsequent publications on Chernobyl – in particular in those of which the authors had a (loose) connection to the 'Caen Group' – as well as in media reporting. In Britain, however, Alexievich's work was received in a completely different manner. Her book was published in the UK in 1999 under the title *Voices from Chernobyl*.[876] But unlike in France, it was neither promoted by book clubs, nor repeatedly reprinted. And while in the French case *La supplication* influenced various playwrights, photographers and researchers, in Britain this narrative never gained an important influence. The only case I could find in which an artist directly referred to Alexievich as the source of his or her inspiration was the poet Mario Petrucci. His two 2004 publications *Half life – Poems for Chernobyl*[877] and *Heavy Water – a Poem for Chernobyl*[878] both made mention of his reading of *Voices from Chernobyl* in 2002, and *Half life* was even dedicated to Alexievich. But compared to the prominence and popularity of *La Supplication* in France, *Voices form Chernobyl* went almost entirely unnoticed in Britain and hardly made a ripple in the British Chernobyl debate.

In researching the circulation of Chernobyl narratives of (former) Soviet Union citizens in Western Europe, the high degree of transnationality in the Chernobyl debates emerged. At the same time, the degree to which the reception of these narratives varied from one national context to the other became evident. Yuri Bandazhevsky is a very salient example in this regard: while he even became an actor of the French Chernobyl debate after 2006, his work has not been given any space in the British Chernobyl debate. Through an analysis of the intertextuality between Eastern and Western European Chernobyl publications, it is possible to not only make out networks of actors but also to trace the origin of specific arguments and narrative elements. In France, the narrative of *La Supplication* has been particularly popular and has thus become an essential part of many French Chernobyl narratives.

3.2 Chernobyl as a topic of literature and photography

3.2.1 Literature

[876] Svetlana Alexievich, *Voices from Chernobyl: chronicle of the future* (London: Aurum, 1999).
[877] Mario Petrucci, *Half life: poems for Chernobyl* (Coventry: The Heaventree Press, 2004).
[878] Mario Petrucci, *Heavy water: a poem for Chernobyl* (London: Enitharmon, 2004).

Alexievich's work is by far the most prominent example of Chernobyl literature. However, there is a wide range of writers who have incorporated the accident into their work: either as an inspiration, a topic, or a metaphor. In the British context, the most famous book that uses Chernobyl as a metaphor is probably Vesna Goldsworthy's *Chernobyl strawberries*, a personal memoir of a life marked by the author's emigration from Yugoslavia to England.[879] A novel that takes Chernobyl as its topic, Piers Paul Read's *Ablaze* – which narrates the accident in the form of an action thriller – is another widespread piece.[880] Both books are actually telling examples of just how un-political Chernobyl is in the British public discourse and to what extent the events of 1986 have been conceptually detached from the UK. In its literary reflection of the *affaire Tchernobyl* the French book *Tchernobyl-sur-Seine*[881] similarly represented the decisive elements of the country's Chernobyl debate. Published in 1987, the book was authored by Hélène Crié and Yves Lenoir. Crié had been involved in the French Chernobyl debate from day one. In May 1986 she published various articles i n *Libération* in which she criticized French official reactions towards the accident and later, in 1998 together with the founder of the CRIIRAD Michèle Rivasi, she published the book *Ce nucléaire qu'on nous cache*. Yves Lenoir has not been any less involved in the French Chernobyl debate: an anti-nuclear activist, first with *Amis de la Terre* and later with *Greenpeace*, he is currently the president of the ETB. In *Tchernobyl-sur-Seine,* the authors presented an accident scenario of the nuclear facility at Nogent-sur-Seine. The choice of nuclear power plant for this scenario was no coincidence: in 1987 this nuclear reactor was in its final stages of construction, and even before the Chernobyl accident occurred, it had already been subject to criticism on the part of anti-nuclear activists because of its proximity to Paris – the plant is located approximately 120 km southeast of the city.[882] The objective of the novel was primarily to shed light on the shortcomings inherent to the French nuclear sector, which, according to the authors, the official responses to Chernobyl had made abundantly clear: namely the secrecy of the 'nucleocratic system' and its policy of disinformation. More than 50,000 copies of the book were sold.[883]

Yet, the success of *Ablaze* and *Tchernoybl-sur-Seine* was limited, and these books were barely noted beyond their strictly national and linguistic context. Therefore, they cannot be considered to be part of the transnational Chernobyl debate. However, there is a book that, like

[879] Vesna Goldsworthy, *Chernobyl strawberries: a memoir* (London: Atlantic, 2005).
[880] Piers Paul Read, *Ablaze: the story of Chernobyl* (London: Mandarin, 1995).
[881] Hélène Crié and Yves Lenoir, *Tchernobyl-sur-Seine*. (Paris: Calmann-Lévy, 1987).
[882] The novel was not the first time in which the idea of a 'Tchernobyl-sur-Seine' was expressed. In the *Libération* on 22 May 1986, an article titled 'Nogent, 7 décembre 1990, 20h 11: Catastrophe-fiction' described the chain of events of a fictional accident in comic strip form.
[883] Philippe Testard-Vaillant, "Yves Lenoir, en vert et contre tous," in *La Recherche. L'actualité des Sciences* 356 (2002), p. 19. Available online: http://www.larecherche.fr/actualite/aussi/yves-lenoir-vert-contre-tous-01-09-2002-86243 (last accessed: 15 November 2013).

Tchernobyl-sur-Seine, was also published in 1987; it, too, was written from an explicitly anti-nuclear perspective and transferred the Chernobyl scenario to the national context: Gudrun Pausewang's *Die Wolke* ('The Cloud').[884] The difference being this last had tremendous success across linguistic and national borders. This children's novel *The Cloud* focuses on the experiences of a girl named Janna-Berta. Janna-Berta lives near the German nuclear power plant *Grafenrheinfeld*. After an accident at the plant, she and her brother Ulli try to flee the radioactive 'cloud' that was released. The chaos that erupts as people attempt to flee the fast approaching radioactive 'cloud', visible on the horizon as a storm front, is described as a situation of mass panic in which everyone fends for themselves without consideration for others. Ulli dies during their flight, and Janna-Berta collapses when the radioactive rainstorm outpaces and engulfs her. She wakes up in an emergency hospital, suffering from acute radiation sickness. Around her children are dying one after another, but Janna-Berta survives. However, since her parents also died in the accident, she is sent to live with her aunt in Hamburg, where she fights to keep the memory of the event alive. The comparison with Chernobyl is explicit and not just because the novel includes as its foreword an announcement that was published in the newspaper *Die Zeit* on 23 May 1986 about how the government had handled Chernobyl. In the story, the characters use their memories of Chernobyl to help them interpret what is happening around them.[885]

In Germany, *The Cloud* has played a key role in the interpretation and remembrance of Chernobyl. The fact that the scenes of mass panic and mass deaths from radiation poisoning, though fictional, have often been considered to be realistic scenarios is of central importance in the history of the reception of the book. For example, a teachers' manual with classroom materials mentioned that the background of the book was real.[886] In spite of the criticism of this decision on the part of conservative circles, the book received the *Deutscher Jugendliteraturpreis* (German Children's Literature Prize) in 1988, and by 2011 almost 1.5 million copies had been sold. The book has been translated to various languages, it is available as an audio book and graphic novel, and a film adaptation was released in 2006 on the 20th anniversary of Chernobyl. In Germany, *The Cloud* is a standard school text that has shaped the imagery of nuclear accidents of a whole generation of children, for whom nuclear accidents are associated with an apocalyptic outcome. Outside of Germany, as well, *The Cloud* has found many readers.

The comparison of *Tchernobyl-sur-Seine* and *The Cloud* clearly shows the different reactions and debates that Chernobyl has spurred in Germany and France. In Germany, the fear that there

[884] This paragraph is an extract of my article: Kalmbach, *Chernobyl as a National and Transnational Site of Memory*, pp. 138.
[885] Gudrun Pausewang, *Die Wolke* (Gütersloh/Rheda-Wiedenbrück, 2003), p. 16 and 23.
[886] Brigitta Reddig-Korn (ed), *Materialien zur Unterrichtspraxis – Gudrun Pausewang, Die Wolke* (Ravensburg: Ravensburger Buchverlag, 2009), p. 3.

would be immediate health effects from radioactive exposure was predominant, while in France, the people's concerns focused on the internal structures of the nuclear industry and, in association with this, a policy of deliberate disinformation by the government and the institutions in charge of radiation protection.

3.2.2 Photography

One of the most important ways to underpin an apocalyptic narrative of Chernobyl has been to make the misery the accident provoked visible, and this can be done foremost through photography. Thereby, images of the accident and its after-effects have been just as transnational and universal as the reception of Alexievich's book. The ghost town Pripyat with its motionless Ferris wheel and hastily abandoned classrooms, the plaintive faces of prematurely aged 'liquidators', the scars on children's necks from thyroid operations: these motifs have been universally used to portray Chernobyl as apocalypse.[887] Because it has become less and less difficult in recent years to enter the restricted zone – bus tours to Chernobyl can easily be booked in Kiev and have thus transformed the spot into a highly requested tourist destination – more and more photos of Pripyat and the power plant have been published or posted on the Internet. Unlike with literature, the circulation of Chernobyl photography is far less impeded by linguistic boundaries. However, differences in the national reception of a photographer's work do exists, and some photography books have experienced a greater degree of transnational circulation than others.

In Britain, the first photography book to be entirely dedicated to Chernobyl was published in 2001: John Darwell's *Legacy.*[888] The book presented pictures that were taken in the restricted zone and thereby focused on the scary scenery of deserted houses and dust-covered interiors. The picture on the cover reflected the mood that was to follow inside the book: It showed a mud-covered puppet doll that brought to mind the doll *Chucky* from the horror movie *Child's Play*. The book included a one-page introduction by Darwell, which presented a lively description of the view he was confronted with while he was taking photos of the spot: '*The sun is shining, the weather is hot. Imagine that you are driving along endless roads surrounded by rich forests. You pass affluent looking farms, villages – even cities. Now imagine that they are all empty, no livestock in the fields, no children playing. Everyone has gone – removed by government decree – to escape an invisible,*

[887] For a philosophical and art-historical analysis of Chernobyl photography, see for example: Daniel Bürkner, "Eine vollkommen neue Realität: Transgression des Wahrnehmbaren in den Bildern Tschernobyls." In *Masslose Bilder: Visuelle Ästhetik der Transgression,* ed. by I. Reichle, S. Siegel, A. Spelten (Munich: Wilhelm Fink, 2009): 189-206.

[888] John Darwell, *Legacy: photographs inside the Chernobyl exclusion zone* (Stockport: Dewi Lewis, 2001).

deadly presence. […] The Power Plant has become a laboratory for scientists from around the world, as they look at the ongoing effects of the disaster and bring much needed currency to an economy bankrupted by catastrophe. Pripyat, the world's most radioactive city, stands alongside the plant […] – this city that was too radioactive to even demolish. Around the plant the soil was removed […], yet it is still unsafe to stay in the areas at any length of time.'[889] His vision of the place was clearly portrayed in the pictures that followed this introduction. In 2006, on the occasion of the accident's 20th anniversary of the accident, some of Darwell's pictures were published in an article in the *International Journal of Epidemiology* of Oxford University Press.[890]

In Germany, the respective work of Robert Polidori and Rüdiger Lubricht has gained particular level of distinction. Polidori's famous photography book *Zones of Exclusion: Pripyat and Chernobyl* was published in 2004 by the German publishing house *Steidl*.[891] And Rüdiger Lubricht's photographs have been given a prominent place in exhibitions, in particular in the Chernobyl exhibition in the *Willy-Brandt-Haus* in 2006 and in the travelling exhibition of the IBB *25 Jahre nach Tschernobyl. Menschen – Orte – Solidarität*[892] in 2011.

Despite the fact that numerous photographers have published on Chernobyl in recent years, one photographer is associated with the accident and its aftermath in particular: Igor Kostin. Kostin's photographs have enjoyed a particularly extensive circulation; his 'popularity' was often reinforced by the claim that he was the first photographer to take pictures of the accident as it was still unfolding.[893] Kostin was there with his camera to document the firefighters dying from radiation sickness in the No. 6 clinic in Moscow, as well as on the roof of the destroyed reactor while 'liquidators' cleared the rubble from it in order to start building the sarcophagus. In subsequent years, Kostin has not only returned repeatedly to Chernobyl, but he has also continued to visit hospitals in Belarus and Ukraine and the 'liquidators' in their own homes. Many of his pictures have been used in the media coverage of Chernobyl and on numerous book covers and have also been displayed in many exhibitions. For example, one of Kostin's photographs is the cover image for the 2006 Chernobyl special issue of the journal *Osteuropa*.[894] This same year, in spring, the *Willy-Brandt-Haus* in Berlin put on a large exhibition of Chernobyl photography in

---

889 Ibid.

890 John Darwell, "Legacy: inside the Chernobyl exclusion zone," in *International Journal of Epidemiology* 35 (2006): 827-831.

891 Robert Polidori, *Zones of Exclusion: Pripyat and Chernobyl* (Göttingen: Steidl, 2004).

892 A photo book by Lubricht was published by the IBB in connection to this exhibition: Rüdiger Lubricht, *Verlorene Orte / Gebrochene Biografien. Fotografien zu Tschernobyl* (Dortmund: IBB, 2011).

893 Anna Veronika Wendland revealed in her work that this story is not true and that the official photographer of the plant was the first to take photos of the destroyed reactor building.

894 This special issue of *Osteuropa* included an article on Igor Kostin, as well: Christine Daum, "Der Kriegsreporter und der Architekturfotograf. Die Tschernobyl-Fotos von Igor' Kostin und Robert Polidori." In *Tschernobyl: Vermächtnis und Verpflichtung*, ed. by Sahm/Sapper/Weichsel, p. 63-70.

which the work of Kostin figured prominently.[895] But Kostin's work was not just an important reference for the German Chernobyl debate in 2006. Familiarity with his work goes far beyond this single national context, and his imagery has played a central role in the transnational Chernobyl debate. The most important example in this regard is his photography book *Confessions of a reporter*, which was published on the occasion of the 20th anniversary of Chernobyl.[896] The same version of the book appeared in the same year in English, French,[897] German,[898] Spanish,[899] and Italian.[900] The English edition, however, was not published by a British publishing house but by the American *Umbrage Editions*. The original version was French. The book was the result of a collaborative project between Igor Kostin, film producer and director Thomas Johnson, and Galia Ackerman. Ackerman wrote the afterword to the French edition and Johnson, in addition to making possible the publication of the book, produced a film whose story line was built around Igor Kostin and his work: *La bataille de Tchernobyl*.[901] Both the book and the film were widely received in France on the occasion of the 20th anniversary.[902] Kostin's interpretation of the effects of the accident is essentially the visual analogue to Alexievich's narratives: his images show the results of an event that has brought unimaginable suffering to humanity, the full extent of which is not yet known, insofar as the mutagenic effects of radiation will only fully manifest in future generations.

In 2011, for the 25th anniversary of Chernobyl, the British newspaper *The Guardian* published on its the website the dossier '*Chernobyl nuclear disaster – in pictures*', which consisted of a '*selection of Kostin's finest photographs.*'[903] The few lines that were written to introduce his work to the reader included an interesting note that reflected the focus on 'Chernobyl children' that by this point dominated the British Chernobyl debate: '*His images of a deformed boy even led to adoption of the 'Chernobyl Child' in UK*.'[904] In fact, this boy was Igor. Thus, Kostin's photographs have profoundly influenced the British imagery of Chernobyl. However, the apocalyptic meaning of his pictures was somewhat lost when these children were removed from their Eastern European context.

While Kostin's work is the model of a transnational visual Chernobyl narrative that has been

[895] For more on this exhibition see: Daniel Haas, "Tschernobyl-Ausstellung – Nahaufnahmen des Leids," *Spiegel-Online,* 3 April 2006: http://www.spiegel.de/panorama/zeitgeschichte/0,1518,druck-409586,00.html (last accessed: 15 November 2013). Hung alongside Kostin's work, were many photos by Paul Fusco and Rüdiger Lubricht.
[896] Igor Kostin, *Chernobyl: confessions of a reporter* (New York: Umbrage Editions, 2006).
[897] Igor Kostin, *Tchernobyl: confessions d'un reporter* (Paris: Editions des Arènes, 2006).
[898] Igor Kostin, *Tschernobyl. Nahaufnahme* (Munich: Kunstmann, 2006).
[899] Igor Kostin, *Chernobil: Confesiones de un reportero* (El Papiol: Efados, 2006).
[900] Igor Kostin, *Chernobyl: Confissioni di un reporter* (Torino: Edizioni Gruppo Abele, 2006).
[901] Thomas Johnson, *La bataille de Tchernobyl* (Paris: Play Film, 2006).
[902] For a detailed analysis of Kostin's and Johnson's work, see: Kalmbach, *Tschernobyl und Frankreich*, pp. 159.
[903] The Guardian, *Chernobyl nuclear disaster – in pictures*: http://www.theguardian.com/environment/gallery/2011/apr/26/chernobyl-nuclear-disaster-in-pictures (last accessed: 15 November 2013).
[904] Ibid.

received in various national contexts, there is another photography book that, the other way around, incorporated the various elements of the transnational Chernobyl debate: Pierpaolo Mittica's *Chernobyl, the hidden legacy*.[905] In 2007, the book was published in English by a British publishing house.[906] In 2011, after Fukushima, a Japanese edition of the book followed.[907] The book's inherent transnationality becomes particularly clear when looking at its contributors: The story told by the photographs of the Italian photographer Mittica was completed by articles written by, amongst others, Naomi Rosenblum, Rosalie Bertell and Wladimir Tchertkoff. In the textual portions of the chapters, statements by Bella Belbéoch and Michel Fernex were placed next to accounts of Nesterenko's work, a fact that is less surprising when considering that the texts were mainly written by Wladimir Tchertkoff – a person who, so to say, incarnates the transnationality of the Chernobyl debate. The bibliography also reveals the transnational approach and character of this book. By this point, many of the references will probably sound familiar to the reader of this study: the CRIIRAD, Medvedev, Busby, Yablakov, Alexievich, Yaroshinskaya, Read, Petryna, Gale, Mould, Ingram, Fusco, Sherbak, Grandazzi, Lemarchand, Chernousenko, etc.

Most certainly, the visual representation of Chernobyl as an apocalypse is in no way limited to photography. Documentaries have played an important role in this context, as well. Of particular relevance from a transnational perspective are *La bataille de Tchernobyl* by Thomas Johnson and *Le sacrifice* by Emanuela Andreoli and Wladimir Tchertkoff. In addition to the visual representation of Chernobyl through photography and film, the accident has also served as topic for graphic designers, illustrators and graphic novelists. With regard to graphic novels, we find for instance in the British case *Doc Chaos,* in the French case *Chernobyl mon amour,* and in Germany the graphic novel adaption of *The Cloud*. In the case of Italy, one issue of the popular comic series *Dylan Dog* was set in the scenery of Chernobyl.[908] However, these fictional graphic novels mainly remained within their national contexts. At the transnational level, the most important fictional visualization of Chernobyl is not a graphic novel but a computer game: *S.T.A.L.K.E.R.: Shadow of Chernobyl. S.T.A.L.K.E.R.* is a popular ego-shooter and is set in the restricted zone after the occurrence of a second severe accident at the Chernobyl power plant. The player must find valuable artefacts that were created by physics that were altered by the high levels of radiation and fight mutants. In addition to the phenomena of altered physics and animal and human mutants, the radiation also

[905] Pierpaolo Mittica, *Chernobyl: the hidden legacy; with additional text by Naomi Rosenblum, Rosalie Bertell, Wladimir Tchertkoff* (London: Trolley, 2007).

[906] In 2006, a Spanish publishing house released a smaller version of the book that did not yet include the text by Wladimir Tchertkoff: Pierpaolo Mittica, *Chernobyl La Herencia Oculta* (Pontevedra: Ellago Ediciones, 2006).

[907] For information on the release of the Japanese edition, see: http://trolleybooks.com/blog/2011/11/japanese-edition-of-chernobyl-the-hidden-legacy-by-pierpaolo-mittica/ (last accessed: 15 November 2013).

[908] In '*La furia dell'Upyr*' Dylan Dog must fight a vampire that lives in the Chernobyl reactor.

poses a threat to the virtual player. However, the radiation poisoning can be treated with vodka. The video game was created by a team of Ukrainian game developers and released in 2007. It has enjoyed widespread success not only in Eastern Europe but also in Western Europe and the US. As a result, in 2010, a sequel was released: *S.T.A.L.K.E.R.: Call of Pripyat.*[909] Daniel Bürkner in his work demonstrated how apocalyptic literature and Chernobyl photography were melded together in this game:[910] The plot of *S.T.A.L.K.E.R.* heavily draws on the pre-Chernobyl science-fiction story *Roadside Picnic* by Arkady and Boris Strugatsky and the film *Stalker* by Andrei Tarkovsky, which was based on this book. The plot unravels in the midst of the scenery of the restricted zone, which includes not only the plant and Pripyat but also the vast expanse of surrounding nature. The imagery of this zone is based on photographs that were taken by people who had visited the restricted area as tourists. Thus, popular photo motifs of the ghost town Pripyat like the motionless Ferris wheel figure prominently in the game's imagery. And like in Kostin's famous photographs taken in the immediate aftermath of the accident from a helicopter and on the rooftop of the reactor, the invisible radiation becomes visible in the game as a type of visual interference. In this regard, *S.T.A.L.K.E.R.* is the absolute embodiment of Chernobyl as an apocalypse, an imaginary world right in line with Hieronymus Bosch's and Albrecht Dürer's monsters and mutants. And in conformity with this concept, it is not the world of the present that is depicted in the game but the period of the Last Judgement that is yet to come. Whether or not the imagery of *S.T.A.L.K.E.R.* is shaping the imagery of nuclear accidents of a whole generation of teenagers who are playing this game, similarly to the way in which the reading of the *The Cloud* did in the late 1980s and early 1990s, is an open question.

3.3 Transnational networks of actors

3.3.1 Remembering Chernobyl

The commemoration of Chernobyl on its anniversaries has played an essential role in keeping alive the memory of the accident and refreshing the knowledge about its ongoing impact. As I have

[909] There is a very well informed and detailed Wikipedia article on *S.T.A.L.K.E.R.,* which includes various links to reviews of the game: *http://en.wikipedia.org/wiki/S.T.A.L.K.E.R.:_Shadow_of_Chernobyl* (last accessed: 15 November 2013). According to this article, *S.T.A.L.K.E.R.* won the *GameSpot's Prize for Best Atmosphere*, and by the end of 2008 more than 2 million copies had been sold worldwide. For detailed information on the plot and the various elements of the zone world, see the game's official website: http://cs.stalker-game.com/en/?page=home (last accessed: 15 November 2013).

[910] Bürkner, *Eine vollkommen neue Realität*, pp. 204.

shown in my comparison of the French and British Chernobyl debate, this commemoration has been very much shaped by the national contexts. Compared to France, the commemoration of Chernobyl has played a minor role in Britain and the accident's anniversaries have attracted far less public attention. Not only has it been given less space in media reporting, but fewer publications on Chernobyl – be they in book form or are CDs or films – have been released in general. Events organized to commemorate the accident and its victims, have been arranged mostly by solidarity movement groups and not, as in France, by anti-nuclear groups like Greenpeace France or the *Réseau: Sortir du nucléaire*. Comparing the memory work carried out in these two Western European countries to the memory work undertaken in Belarus or Ukraine reveals that the political instrumentalization of Chernobyl is quite varied, and it has not always focused on questions of nuclear energy use. The different implications that are attributed to Chernobyl as a national site of memory mirror the divergent processes of coming to terms with the event and its consequences.[911]

In addition to these national Chernobyl commemorations, the transnational sphere of memory work has become increasingly more important in recent years. On the occasion of the anniversaries, in particular, some actors have made considerable efforts to influence the Chernobyl commemoration beyond their national context, to organize events across linguistic and national borders, and to connect activists from the East and the West. The 20th anniversary of Chernobyl in 2006 was the first time this transnational cooperation visibly gained momentum. Two crucial contextual elements fostered this concerted action: the proclaimed 'nuclear renaissance' which manifested in Europe in the new build projects in France and Finland, and the Chernobyl reports published in 2005 by international expert groups. These official reports had horrified anti-nuclear campaigners because the authors of the reports considered the direct health impact of the radiation to be much lower than what critical assessments were suggesting. Thus, anti-nuclear campaigners used the 20th anniversary of the accident to challenge official evaluations of Chernobyl's impact and to call into question pro-nuclear policies.

Greenpeace International was a key player in cultivating the transnational connection and fostering Chernobyl commemoration in 2006. In response to the reports released by the international expert groups, the NGO initiated a structured collection of scientific studies that provided an evaluation of Chernobyl that suggested much stronger health effects than the official reports. In order to ensure these studies and their results would reach the widest audience possible, Greenpeace International commissioned a report that has since been posted on its website for free download: *The Chernobyl Catastrophe – Consequences on Human Health.*[912] To compile this

[911] For a detailed discussion of this issue, see: Kalmbach, *Chernobyl as a National and Transnational Site of Memory.*

[912] Alexey Yablokov, Iryna Labunska, Ivan Blokov (eds.), *The Chernobyl Catastrophe - Consequences on Human Health* (Amsterdam: Greenpeace, 2006):

report, Alexey Yablokov took on the role as main general editor. Most of the contributors to this report were from Eastern Europe. Similar to the TORCH report, Greenpeace's report has become a pivotal reference for arguments that counter the validity of the Chernobyl evaluations made by the IGO's international experts groups.

In addition to providing the transnational Chernobyl debate with a scientific foundation upon which to base its queries into the statements of the public authorities, there have been other actors who focused on performative action to raise public awareness on the lasting consequences of Chernobyl. The foundational idea of two such initiative in particular was inherently transnational: the *International Chernobyl Day* and the *European Chernobyl Network*.[913]

International Chernobyl Day

The *International Chernobyl Day* in 2011 adopted the slogan '*25th anniversary – 25 days of action.*' The concept of the *International Chernobyl Day* is less a unified event coordinated by a central organization than it is a loose network of initiatives that organize public remembrances of the accident every year. This network serves as a platform the exchange of ideas and to bring together a wide variety of individual actors, so as to increase their visibility. The French anti-nuclear network *Réseau: Sortir du nucléaire* provides a sort of central coordination by listing individual events on the website www.chernobyl-day.org, where partner organizations from around the world can announce their calls to action. The site also provides *Chernobyl Day* materials such as posters. Partner organizations include, for instance, regional branches of Greenpeace and various local anti-nuclear groups.[914] The events organized in 2011 – the network listed 532 events in 27 countries – included commemorative rallies, marches, benefit concerts and candlelight vigils, to give just a few examples. In 2011 as well as in 2012, the Fukushima victims were incorporated into the events commemorating the Chernobyl victims in April.[915] In 2013, the *Réseau: Sortir du nucléaire* divided its memory work in two separate events. It organized a human chain in early March to commemorate Fukushima[916] and then its activities in late April 2013. The motto of the activities around 26 April 2013 was, however, not limited to Chernobyl but claimed: '*From uranium mine to nuclear waste, we are all concerned by nuclear power!*'

http://www.greenpeace.org/international/en/publications/reports/chernobylhealthreport/ (last accessed: 15 November 2013).

913 The following part of the paragraphs on the 25th anniversary are an extract of my article: Kalmbach, *Chernobyl as a National and Transnational Site of Memory*, pp. 155.

914 A detailed list of events and the organizations involved for each year may be found at: http://www.chernobyl-day.org/ (last accessed: 15 November 2013).

915 In 2012, the umbrella title for the events was '*Tchernobyl, Fukushima: plus jamais ça!*'

916 For information on this initiative, see: http://chainehumaine.org/ (last accessed: 15 November 2013).

The *International Chernobyl Day* is thus an attempt to connect at the transnational level the Chernobyl commemoration with a direct contestation of the use of nuclear energy. This initiative, which has its roots in France but has already spread through the transnational network of anti-nuclear groups of Europe, is an effort to unify the different national sites of memory of Chernobyl – all of which have differing national connotations – into one transnational site of memory, a site of memory in which Chernobyl is infused with an explicit anti-nuclear meaning.

European Chernobyl Network

An initiative that takes a similar direction as the *International Chernobyl Day* is the *European Chernobyl Network.* However, it is very important to note that these two initiatives spring from two very different actor clusters. Where the *International Chernobyl Day* has grown out of the anti-nuclear movement, the origins of the *European Chernobyl Network* lead to the Chernobyl solidarity movement. For the associations and individuals who are actively involved in the Chernobyl solidarity movement, the accident's anniversary has always been a time to remind people of the problematic situation of the residents – particularly the children – in the most affected regions in Eastern Europe and to call for donations and support.

For the 25th anniversary of the accident, a campaign by the *Internationales Bildungs- und Begegnungswerk* (*Association for International Education and Exchange*, IBB) gained particular prominence. It pursued the goal of bringing together the various aid initiatives at an *International Partnership Conference* in Minsk, the ultimate purpose of which was to take an active role in shaping the commemoration of Chernobyl on its 25th anniversary and after.[917] With this in mind, by November 2010 representatives of various associations had already met and established the *European Chernobyl Network*, which devised ideas for joint initiatives that would be carried out on 26 April, including a candlelight event.[918] During the conference in April 2011, the cornerstone for a *Zukunftswerkstatt* ('*workshop for the future*') – that would take the form of an information centre on renewable energy – was laid on the grounds of the IBB in Minsk. This *Zukunftswerkstatt* thus connects the transnational commemoration of the victims of Chernobyl with the demand for an energy transition; a connection that must also be seen in relation to the Belarusian government's decision in March 2011 to build their own nuclear power plant.

[917] For the programmatic background, see: Astrid Sahm, "Die Katastrophe von Tschernobyl im Kontext einer europäischen Erinnerungskultur." In *Tschernobyl und die europäische Solidaritätsbewegung,* ed. by IBB, pp. 16–32.

[918] The website of the *European Chernobyl Network* has more information about its members and the candlelight event: http://www.ecnchernobyl.eu/ (last accessed: 15 November 2013).

3.3.2 Forgetting Chernobyl

Next to these actions promoted by the anti-nuclear movement and the Chernobyl solidarity movement that aim to preserve and keep alive the memory of Chernobyl, there are other actors of the Chernobyl debate who would rather see the accident forgotten than actively remembered every year. From their perspective, to remember Chernobyl in an 'apocalyptic' manner is rather counterproductive as it only contributes to an increase in 'radiophobia' and thus prevents the people most affected by the accident from overcoming the accident and reaching a post-accident normalization.

The concept of 'radiophobia'

My classification of a narrative as 'radiophobic' does not necessarily mean that the author entirely subscribes to this concept or uses this term directly – the same may be said of my classification of a narrative as 'apocalyptic', which does not mean automatically that the author includes mutated monsters in his or her Chernobyl account. In this study, I use the classifications 'apocalyptic' and 'radiophobic' as an *Idealtypus* ('ideal type'); in conformity with Max Weber's considerations that an *Idealtypus* is not identical to a particular observed phenomenon but rather a conglomerate and synthesis of elements that are common to similar cases. Thus, the classification of a narrative as 'radiophobic' does not imply that the author advocates that 'radiophobia' as a medical condition exists. This classification rather means that the author allocates health problems observed in the population of the most impacted areas to other causes than ionizing radiation – and therefore considers attempts to connect these health problems to the ionizing radiation to be the result of an exaggerated risk assessment of this radiation.

The term 'radiophobia' has been widely used in accounts on Chernobyl. Mostly, it does not refer to a diagnosable phobia or psychosis in an individual, but rather paraphrases what is considered an exaggerated fear of a group of people; this is a similar mechanism with regard to the fact that a real 'panic' is rarely diagnosed in an individual, while accounts of 'panicking individuals' are common to various situations. The term 'radiophobia' has not only figured in early official evaluations of the accident's impact but has also appeared in many rather pro-nuclear accounts of Chernobyl. As Tatiana Kasperski demonstrated in her research, the term 'radiophobia' in relation to Chernobyl was used for the first time in a report by the president of the national radiation protection committee of the USSR, Ilin, and his colleague Pavlovskiï. This report was published in the 4th

IAEA Bulletin of 1987 under the title '*Radiological Consequences of the Chernobyl Accident in the Soviet Union and Measures Taken to Mitigate Their Impact: Analysis of Data Confirms the Effectiveness of Large-Scale Actions to Limit the Accident's Effects.*'[919] In Belarus, the term 'radiophobia' was profoundly discredited in the 1990s because '*the protest movements which emerged in the late 80s and early 90s and for which the Chernobyl catastrophe served as catalyst often referred to this term in order to demonstrate the Soviet authorities' cynicism vis-à-vis the dangers the inhabitants and the liquidators had encountered. The term 'radiophobia' thus became widely discredited because it evoked the attempts of the communist leaders to dissimulate the harm caused by the accident by misinforming the population and the international community.*'[920] Therefore, after this development, the term 'radiophobia' was no longer used in official reports on Chernobyl. However, the assumption has continued to perpetuate that it is not the radiation but the fear of the radiation that causes the psychological and physical sufferings in people from the most affected areas, who incorrectly attributed their illnesses to radiation in the first place which in turn exacerbates their fear of the radiation. This concept was integrated into the wider notion of 'socio-economic stress' in which an exaggerated fear of radiation was inserted onto a list of other stress factors like evacuation, distrust in medical and political authorities, worries about the health and future of their children, etc.

At the international level, the reports produced by the *International Chernobyl Project* and its successor the *Chernobyl Forum* widely diffused the concept of 'stress induced illnesses' as the common narrative of the health impact of Chernobyl. In their reports on the health effects of the accident, these international expert groups placed particular emphasis on the psychological problems associated with the accident. In this regard, the 1991 report by the International Chernobyl Project stated that '*there were many important psychological problems of anxiety and stress related to the Chernobyl accident and in the areas studied under the Project these were wholly disproportionate to the biological significance of the radioactive contamination.*'[921] The physical condition of the people living in this area was, however, considered to be less problematic as this quote reveals: '*General Health: The children who were examined were found to be generally healthy. […] No statistically significant evidence was found of an increase in incidence of foetal*

---

[919] Kasperski, *La politique de la mémoire*, p. 393.

[920] Ibid., p. 394: '*Les mouvements contestataires nés à la fin des années 1980 et au début des années 1990 auxquels la catastrophe de Tchernobyl a servi de catalyseur ont par la suite fait souvent référence à ce terme en démontrant ainsi le cynisme des autorités soviétiques vis- à-vis des dangers encourus par les habitants et les liquidateurs. Le terme de radiophobie a ainsi été largement discrédité puisqu'il évoquait les tentatives des dirigeants communistes de dissimuler les dommages causés par la catastrophe en désinformant les populations et la communauté internationale.*'

[921] The International Chernobyl Project, *An Overview. Assessement of Radiological Consequences and Evaluation of Protective Measures. Report by an International Advisory Committee*. (Vienna: IAEA, 1991), p. 32.

anomalies as a result of radiation exposure.'[922] According to the International Chernobyl Project, the health-related problems in this region did not stem from the radiation levels, but '*action should be taken on adult hypertension and dental hygiene as major health issues.*'[923] Fifteen years later, in the Chernobyl Forum's report on the health effects of the accident, the fundamental considerations remained very much the same: '*Anxiety over the effects of radiation on health shows no sign of diminishing. Indeed, it may even be spreading beyond the affected areas into a wide section of the population. Parents may be transferring their anxiety to their children through example and excessively protective care. Yet while attributing a wide variety of medical complaints to Chernobyl, many residents of the affected areas neglect the role of personal behaviour in maintaining health. This applies not only to radiation risks such as the consumption of mushrooms and berries from contaminated forests, but also to areas where individual behaviour is decisive, such as misuse of alcohol and tobacco*.'[924] In this regard, the Chernobyl Forum reasoned that '*the most pressing health concerns for the affected areas thus lie in poor diet and lifestyle factors such as alcohol and tobacco use, as well as poverty and limited access to health care*.'[925] The reports by the WHO on Chernobyl health effects – which lay at the basis of the Chernobyl Forum report – stressed the physical effects of the accident, as well. In a 2006 publication, the WHO stated that '*the mental health impact of Chernobyl is the largest public health problem caused by the accident to date*.'[926]

Yet, from the Chernobyl Forum's point of view, it is not just the psychological setting that causes severe problems in the population of the most affected areas, but also the government's actions in addressing these problems: '*Added to exaggerated or misplaced health fears, a sense of victimization and dependency created by government social protection policies is widespread in the affected areas. The extensive system of Chernobyl-related benefits has created expectations of long-term direct financial support and entitlement to privileges, and has undermined the capacity of the*

---

922 Ibid., pp. 33.

923 Ibid., p. 35.

924 The Chernobyl Forum, *Chernobyl's Legacy: Health, Environmental and Socio- Economic Impacts and Recommendations to the Governments of Belarus, the Russian Federation and Ukraine* (Vienna: IAEA, 2006) second revised version, pp. 36.

925 Ibid., p. 37.

926 WHO, *Health Effects of the Chernobyl Accident and Special Health Care Programmes, Report of the UN Chernobyl Forum Expert Group 'Health'* (Geneva: WHO, 2006), p. 95. In the conclusion of this report, the members of this expert group summed up their understanding of the nature of the health problems: ibid, p. 96: '*The accident has had a serious impact on mental health and well-being in the general population. Importantly, however, it appears that this impact is demonstrable mainly at a sub-clinical level. Although the empirical studies do not support the view that the public anxiety bears a resemblance to clinical psychiatric disorders, such as phobia or psychosis, the disaster did have a psychological effect that is not limited to mental health outcomes. It also has ramifications for other areas of subjective health and health-related behaviour, especially reproductive health and medical service utilization, and the level of trust in authorities. Further, it may influence people's willingness to adopt safety guidelines issued by the authorities*.' For current WHO research on Chernobyl health effects, see the website of the IARC's programme '*Agenda for Research on Chernobyl Health*' (ARCH): http://arch.iarc.fr/who/expert.php (last accessed: 15 November 2013).

individuals and communities concerned to tackle their own economic and social problems. The dependency culture that has developed over the past two decades is a major barrier to the region's recovery.'[927] If we take this reasoning a step further, it actually means that to remember and actively commemorate Chernobyl as an apocalyptic catastrophe is the worst thing that can be done to the people living in the most affected areas. But this does not apply just to the people living in the most affected areas, but also to the '*several hundreds of thousands of individuals whose lives have been directly and significantly affected by the consequences of the accident […] including resettlers […] and many of the former clean-up workers*', who need to move on in their lives and must defeat their stigmatism of a Chernobyl-past. '*The priority here should be to help these people to normalize their lives as quickly and as far as is possible. They need to be reintegrated into society as a whole, so that their needs are increasingly addressed through mainstream provision and according to the same criteria as those that apply to other sections of society*.'[928] The same is true for the most affected regions as such; they too should overcome their stigma of Chernobyl. In this regard, the Chernobyl Forum recommended to '*urgently revisit the classification of Chernobyl-affected zones, as current legislation is too restrictive, given the low radiation levels that now prevail in most territories*.'[929] It also recommended that the land should be partly used again, for settlement, agriculture and other businesses.

This kind of thinking is not unique to the international experts' groups that evaluate the consequences of Chernobyl and give advice and recommendation on how to overcome the existing problems. This way to describe, attribute and interpret the health-related effects of Chernobyl is widespread among radiobiologists. But the reports by the International Chernobyl Project and the Chernobyl Forum in particular have disseminated this narrative to a wider audience. Due to the high-ranking members of these international experts' groups, these reports emanate a strong sense of authority, and for this reason became a central reference for people looking for independent and credible expert information on Chernobyl. Thus, the explanatory concept of 'radiophobia', paraphrased as '*exaggerated or misplaced health fears*', has become a 'meta narrative' present in many accounts on the impact of the accident. Many individuals as well as public authorities have accepted these reports as the 'state of the art' of Chernobyl research.

In addition to the question of radiation-related health effects, the topic of monetary compensation has been the source of a number of polemics. The chapter '*Demographic situation in territories of Russia affected by the Chernobyl accident*' in the 1996 special edition of *Radiation*

[927] The Chernobyl Forum, *Chernobyl's Legacy*, p. 37.
[928] Ibid., p. 43.
[929] Ibid., p. 50.

Protection Dosimetry is a telling example in this regard. In relation to the topic of alcohol consumption, the authors stated that '*as to the affected population, although data are not available, it is reasonable to think that the situation is even worse, as people there have extra money as a compensation from the government for being irradiated. […] In some respects the most contaminated areas were in a better situation than unaffected ones.*'[930]

World Nuclear Association

The pro-nuclear lobby was rapid to take up the concept of 'radiophobia' to prove that Chernobyl-related problems are in fact not linked to the physical fallout of the accident. A key actor in the transnational nuclear lobby is the London-based *World Nuclear Association* (WNA), which until 2001 was the *Uranium Institute*.[931] On its website, www.world-nuclear.org, the WNA showcases itself as an information service on nuclear energy and offers '*Nuclear Basics: Key information and surprising facts on nuclear energy and our world*' as well as an '*Information Library […] which includes over 150 information papers containing detailed information on all aspect of nuclear energy*.'[932] In accordance with this claim, the website includes a detailed dossier on the '*Chernobyl Accident 1986*'. At the beginning of the dossier, the WNA summarizes the most important information on Chernobyl in five bullet points: '*1.) The Chernobyl accident in 1986 was the result of a flawed reactor design that was operated with inadequately trained personnel. 2.) The resulting steam explosion and fires released at least 5% of the radioactive reactor core into the atmosphere and downwind – some 5200 PBq (I-131 eq). 3.) Two Chernobyl plant workers died on the night of the accident, and a further 28 people died within a few weeks as a result of acute radiation poisoning. 4.) UNSCEAR says that apart from increased thyroid cancers, "there is no evidence of a major public health impact attributable to radiation exposure 20 years after the accident." 5.) Resettlement of areas from which people were relocated is ongoing.*'[933] The list of references attached to the end of the dossier illustrates that WNA's narrative is well in line with official evaluations of the highest international authorities: The first reference listed is the report by the *Chernobyl's Forum Expert Group 'Health'*, which was published in 2006 by the WHO, and the third

[930] G. N. Kelly and V. M. Shershakov (eds.), *Environmental contamination, radiation doses and health consequences after the Chernobyl accident* (Ashford: Nuclear Technology Publishing, 1996), p. 118.

[931] In 1986, the Uranium Institute briefly entered the Chernobyl debate when it published the booklet *Understanding Chernobyl* (London: Uranium Institute, 1986). This booklet consisted of seven papers that were presented to members of the *Uranium Institute* by French and British radiation safety experts, like Pierre Tanguy (IPSN) or John Gittus (AEA). The *Uranium Institute* decided to publish these papers '*so that a wider audience can benefit from the explanations of safety policy*.' (Ibid., p. v).

[932] World Nuclear Association: http://www.world-nuclear.org/ (last accessed: 15 November 2013).

[933] World Nuclear Association, *Chernobyl Accident 1986*: http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Chernobyl-Accident/ (last accessed: 15 November 2013).

reference listed is the 1991 report released by the International Chernobyl Project.

The Internet dossier is not WNA's only account of Chernobyl health effects. In 2012, in response to the events in Fukushima, the WNA commissioned the documentary *Fukushima and Chernobyl: Myth versus Reality*.[934] In this film, the WNA explained why Chernobyl just did not have as many terrible health effects as so many anti-nuclear activists claimed. It is very interesting to examine this film in more detail and see who the WNA mobilized to underpin its arguments. The film starts with pictures from Fukushima and an account on the emergency management. Shortly thereafter the tone of the narrator changes: '*But these actions only seemed to add to the mood of public anxiety and confusion fed by a global media frenzy*.'[935] Freeze frames of the cover pages of various international newspapers illustrate this statement while the narrator continues: '*The common assumption was that many Japanese people would suffer long-term cancers from the radiation. As for the workers still in the plant, they were seen as dead men walking. But with the eyes of the world on Fukushima, an important anniversary was taking place, one which offered lessons on the public health impacts of nuclear events. It was the 25th anniversary of Chernobyl, the world's worst nuclear accident.*' After this introduction trailer, the film switches to Vienna and pans to the UN headquarters while introducing UNSCEAR. This serves as the introduction to the next take, an interview with Dr. Malcolm Crick, Principal Officer of UNSCEAR. Crick is the first of three scientists to present an evaluation on Chernobyl's health effects: '*After Chernobyl, the only public health impact we have seen has been more than 6,000 thyroid cancers amongst those people who were children at the time of the accident, drinking contaminated milk. Of those 6,000 or more cases perhaps 15 have died, its not a very fatal disease. […] Then when we think about other effects, actually there is no really good persuasive evidence of any public health impact due to radiation from the accident, other than the thyroid cancers. Most people find that kind of hard to believe but in fact that's the case.*' Professor Gerry Thomas of Imperial College London is the next to present her evaluation. She is introduced by the narrator as the Director of the *Chernobyl Tissue Bank*, where she has carried out '*work that has led Dr. Thomas to re-assess her views on nuclear energy.*' Unlike Crick, Thomas does not give her statement in a face to face interview with the camera but in a university class where she tells her students: '*The health consequences of a nuclear power accident may not be as bad as we first thought. I was anti-nuclear until I started working on Chernobyl. Now, no problem at all. The results of the studies that we carried out post-Chernobyl, which were big international studies, have not been what we might have expected from the outset.*

[934] World Nuclear Association, *Fukushima and Chernobyl: Myth versus Reality* (London: WNA, 2012). The film is available on WNA's website (http://www.world-nuclear.org/Features/Fukushima/Fukushima-and-Chernobyl---Myth-versus-Reality/) as well as on youtube (http://www.youtube.com/watch?v=2Ncm8KwxWNg). Interestingly, the usual commentary function for the youtube video is deactivated (last accessed: 15 November 2013).

[935] Transcription from the film available on youtube by the author.

Those studies have shown that there is only one thing that we can pin down to being due to radiation, and that's the sharp increase of thyroid cancer in those who were very young at exposure to the Chernobyl accident.' From Crick, there is a direct switch over to the third scientist who speaks in the WNA's film: Professor Abel Gonzales of the *International Commission on Radiological Protection*. Like Thomas, Gonzales is filmed while he is speaking in a classroom, elaborating on the effects of iodine in children. Summing up the statements of Crick, Thomas and Gonzales, the narrator concludes: '*So the voice of leading scientific bodies is clear: The only observable public health impact due to radiation after Chernobyl has been no more than 6,000 thyroid cancers of which only around 15 are proven fatal. As for the emergency workers who received the highest doses, fewer than 50 have died. These numbers, while significant, represent a fraction of the hundreds of thousands if not millions of victims predicted after the accident.*' This summary is followed by another statement by Thomas. Although the narrator announces the statement to be an evaluation of the '*doses received by residents living around the Chernobyl plant*', Thomas actually presents the figure for a much wider population group: '*The whole body doses to six million residents is about 9 mSv, so each person had about 9 mSv. […] Now, 9 mSv is about what any of us will get when we are going to have a CT scan. Do we sit there and panic about having a CT scan? No, we don't! […] We expose ourselves to radiation voluntarily, we can't avoid it, we live in a radioactive world.*' This statement provides the basis of an account of different sources and levels of background radiation by the narrator. From here, the narrator passes to the actual key question of the film: '*So what of Fukushima-Daiichi?*' Thomas is the first to answer the narrator's question: '*In real terms, I doubt that there will be any radiological consequences in the whole population at all.*' In the following clip, all three scientists elaborate on the differences between Chernobyl and Fukushima: in Japan, there were no children who drank contaminated milk, and the emergency workers are much better protected. Again, the narrator sums up these statements in a conclusion: '*So thanks to measures taken by the Japanese authorities, expert opinion is that we can expect no health impact on the population around Fukushima due to radiation. As for the workers on the site, they, too, can expect to avoid any effects from the exposure they received. So, if the health consequences are not what they are commonly believed to be, what are the consequences of a serious nuclear accident like Chernobyl?*' It was Crick to give the first answer: '*When we think then about the non-radiation impact, clearly, this has been a tremendous trauma for the people in terms of the stress, and anxiety, and concern that the radiation [..., incomprehensible] has caused them. And the counter measures that have been made disrupted their lives.*' After the statements by the other two, the narrator presents, once again, his conclusion followed by another important question: '*In the confusion and disruption that follows a nuclear accident, the social and economic*

consequences become far greater than those relating to public health. So what can be done?' Crick's answer follows promptly: '*Well, I think the scientific community has to do a much better job in communicating to the public or to the lay-person. Decisions are being made all the time on fairly important issues that relate to the understanding of science. And I think the understanding is hindered by the quality of communication that we, the scientific community, have given in the past*.' Thomas then argues in the same direction, and her statement forms the conclusion of the film: '*I don't think we should blame the media completely for what happens, scientists have responsibility as well. It is important to be able to get a public understanding of the science of a situation like what happened in Fukushima, out there, so that the public can make a judgement for itself. And if nobody is willing to talk to the media on the science side or a government representative for example being put up [..., incomprehensible] and stands the science and cannot answer the questions so that feeds people's fear. Communication is actually extremely important in a disaster like that, and if communication had been better post-Chernobyl, if communication had been better post-Fukushima, maybe we wouldn't have done the psychological damage that we have [..., incomprehensible] done to these populations*.' The following end titles are of paramount importance for they openly address the primary objective of the film: i.e., to ensure that the events in Fukushima do not hinder the 'global renaissance' of nuclear power. '*Scientists, industry and governments must work harder to dispel widespread myths about the radiation effects of nuclear accidents. For the people of Fukushima, the question of when they can return home should be determined by rational science-based judgements. Nuclear power holds great potential to meet growing worldwide energy needs in the 21st century. Fulfilment of this potential will depend on better public understanding of radiation. WNA aims to serve as a comprehensive source of reliable information on nuclear technology*.'

The film *Fukushima and Chernobyl: Myth versus Reality* is a telling example of how Fukushima provoked renewed interest in the debate about the health effects of Chernobyl. It illustrates the way in which, through the events in Japan, the debate on low-level radiation health effects has gained tremendous importance for the pro-nuclear side: the promotion of 'radiophobic' narratives on Chernobyl was used as a type of armour to deflect anti-nuclear voices who, alarmed by the events in Fukushima, called for a reassessment of the global nuclear enterprise. At the same time, it was important for the anti-nuclear side to promote 'apocalyptic' narratives on Chernobyl. This underpinned the argument that, like Chernobyl, Fukushima, too, will have considerable negative health effects for people in Japan. The pro-nuclear side, on the other hand, referred to their 'radiophobic' narrative of Chernobyl in order to emphasize and reiterate that the worst thing that could possibly happen in Japan was for fear driven overreactions to manifest.

The question of Chernobyl health effects did not just gain central importance in the debate about the global nuclear enterprise from its association with the events in Fukushima. Within the framework of the advocated 'nuclear renaissance', the pro-nuclear side has considered it very important to stress that Chernobyl has just not had as devastating an impact as many people seem to believe. To argue against and debunk the apocalyptic narrative of Chernobyl meant to remove a central obstacle wherein the public could then perceive nuclear energy as a benign technology. The contributions to the 42nd Annual Meeting of the *American National Council on Radiation Protection and Measurements*, which titled *Chernobyl at Twenty*, is quite revealing in this regard.[936] Among representatives of various national and international nuclear-related public authorities, Abel Gonzales – one of the three scientists that was interviewed in the WNA film – harshly criticized the '*Chernobyl saga*.'[937] The target of these arguments was summarized in the closing sentence to the conference's summary and discussion panel by Ralph L. Andersen of the *Nuclear Energy Institute*, Washington: '*Major reviews of the effects of the Chernobyl accident reported in the Chernobyl Forum and discussed at an international conference in Vienna in September 2005 have led to general consensus that the health and environmental consequences of the accident, although large and unprecedented, should not be viewed as an impediment to future increase in the use of nuclear power*.'[938]

The fact that so many international nuclear-related public authorities subscribed to the 'radiophobic' narrative of Chernobyl induced anti-nuclear activists to investigate into the possible reasons as to why these public authorities and the scientists linked to these institutions were not more nuclear-critical in their assessments but instead offered evaluations that perfectly fit the needs of the pro-nuclear lobby. In this context, one particular document attracted the attention of many anti-nuclear activists: the *IAEA-WHO Agreement*.

3.3.3 Making Chernobyl a case for public health

In recent years and in direct connection to the debate on the health effects of low-level radiation, anti-nuclear activists have directed their criticism more and more toward an agreement that the IAEA and the WHO signed in 1959. Many activists see this agreement to be the reason why such a low estimate of Chernobyl victims is presented in the official evaluations and also the reason that these evaluations have placed the emphasis on the psychological impact of the radiation rather than

[936] The contributions are published in: *Health Physics – The radiation safety journal*, 93 (5:2007).
[937] Abel J. Gonzales, "Chernobyl Vis-à-Vis the Nuclear Future: An International Perspective" in: ibid., pp. 590.
[938] Ralph Andersen, "Summary and Discussion of Major Findings From Chernobyl" in: ibid., p. 595.

the physical impact. In addition, anti-nuclear activists maintain that this agreement created the condition whereby the lack of knowledge on the health effects was not only deliberately encouraged and upheld at the international level, there was political pressure to refrain from conducting studies to scientifically investigate these effects further. From their perspective, the underlying aim of such a strategy was to obfuscate the real risk factors in order to skew the cost-benefit analysis in favour of the civil use of nuclear power. In this regard, it is not a surprise that the activists identified the IAEA as the prime actor behind this 'open conspiracy', insofar as the aim of the international agency is to '*encourage and assist research on, and development and practical application of, atomic energy for peaceful uses throughout the world.*'[939] In order to understand the background of the debate over the IAEA-WHO Agreement, it is therefore necessary to first examine the part the IAEA played in the evaluation of Chernobyl.

IAEA's role in the evaluation of Chernobyl

From the very beginning, the IAEA has played a central role in the assessment and evaluation of the Chernobyl accident. What will be examined here is the public perception of its engagement, in particular from anti-nuclear perspectives.[940]

In carrying out the media reporting on Chernobyl, journalists from day one looked for experts who could comment on the events. In order to find answers to their questions, they first turned to the national radiation protection authorities. These national experts, on the other hand, had received their information mainly from the IAEA. In May 1986, Hans Blix and Morris Rosen of the IAEA were the first Westerners to visit the site of the accident. Some months later, in August 1986, the IAEA organized the *Post-Accident Review Meeting on the Chernobyl Accident*, a meeting in which Eastern and Western nuclear experts were called together to evaluate the cause and to determine the chain of events of the accident. This meeting returned Chernobyl to the front pages of Western newspapers. Journalists were eager to hear and write about the reports the USSR delegation had submitted. They also wanted to hear what conclusions the IAEA as an institution would reach of the recent events. During this conference, Morris Rosen, the Director of nuclear safety, gave an interview to *Le Monde*. One specific phrase from this interview is still regularly quoted in anti-

[939] Statute of the IAEA, Article III, Paragraph A1: http://www.iaea.org/About/statute_text.html (last accessed: 15 November 2013).

[940] I am unable to present here an institutional history of the IAEA's engagement in the Chernobyl debate. I did not undertake research in the IAEA archives, and therefore I can not provide an answer to the question: What role did the IAEA *actively* play in the debate on the health effects of Chernobyl? Nor can I provide a concise history of the IAEA's publication or funding activities on the topic of Chernobyl. This aspect of IAEA's history has not yet been researched.

nuclear narratives on Chernobyl: '*Even if an accident of this type should happen once a year [...] I would still consider nuclear power an interesting energy source*.'[941] For anti-nuclear activists, this comment epitomizes the arrogance and conscious refusal of the IAEA to look at or acknowledge the implicit risks of nuclear technology. From the anti-nuclear perspective, Rosen's statement is proof that this organization is willing to continue to promote nuclear power regardless of the price the victims of this technology must pay. Rebecca Harm's foreword to the TORCH report is a cogent example of the way in which the 1986 conference and Rosen's comment have become landmarks in the debate on the Chernobyl health effects. Harms opened her account with the following statement: *'In August 1986, four months after the Chernobyl disaster, Morris Rosen, head of the Division of Nuclear Safety of the Vienna based International Atomic Energy Agency (IAEA), declared: "Even if there was a Chernobyl type accident every year, I would still consider nuclear power an interesting type of energy production". (Le Monde, 28 August 1986) After a gigantic explosion and a ten day blazing fire had spread two hundred times the amount of radioactivity of the combined releases of the Hiroshima and Nagasaki bombs all over the planet, after the evacuation of over one hundred thousand people, the IAEA's chief nuclear safety officer considered an annual repetition of such a catastrophe an acceptable hypothesis. This man was the most powerful person in the IAEA on the issue of nuclear safety between 1981 and 1996, when he retired from his position then as Assistant Director General for Nuclear Safety. Breathtaking. Rosen's post-Chernobyl declaration sheds a particular light on the mission statement of the IAEA, which stipulates that the Agency "develops nuclear safety standards and, based on these standards, promotes the achievement and maintenance of high levels of safety in applications of nuclear energy, as well as the protection of human health and the environment against ionizing radiation". Frightening.*'[942]

In addition to the 1986 conference, it was the IAEA's involvement in the International Chernobyl Project and the Chernobyl Forum that decisively shaped the perception anti-nuclear activists had regarding the role the IAEA filled in the evaluation of Chernobyl. Activists all over the world were shocked by the statements contained in the Chernobyl Forum's final report of 2006. Because this report was published by the IAEA Division of Public Information, the report was considered to be a direct representation of IAEA policies. The Chernobyl Forum was founded in 2003 upon the initiative of the IAEA. It consisted of a group of experts from the IAEA, WHO, UNDP, UNEP, UNSCEAR, UN-OCHA, FAO, as well as from the World Bank and the governments of Belarus, Ukraine and the Russian Federation. The final report released by the Forum in 2006

[941] Le Monde, *La catastrophe de Tchernobyl pourrait être à l'origine de 24 000 décès par cancers*, 28 August 1986, p. 20: '*Même s'il y avait un accident de ce type tous les ans, – ce qui est loin d'être le cas – je considérerais le nucléaire comme une source d'énergie intéressante*.' In translations, this quote is often shortened or paraphrased

[942] Fairlie and Summer, *The Other Report on Chernobyl*, p. 4.

included these principal positions on the health effects of Chernobyl (paraphrased as follows): The victims of the Chernobyl radiation are a small number of firefighters who died of acute radiation syndrome, the children who died from thyroid cancer, and the possible some 4,000 fatal cancer cases among the 'liquidators', evacuees, and the population of the highly contaminated area. The health effects on the five million residents of the other 'contaminated' areas (the report always put the word 'contaminated' in quotation marks) are even more speculative as radiation-related deaths are expected to be less than one per cent of the normal cancer-induced mortality rate.[943] The report rejected outright the possibility that radioactive exposure from Chernobyl could cause DNA mutations that would affect future generations – in fact from the perspective of this group, birth defects caused by Chernobyl do not exist. Instead, the Chernobyl Forum considered the increasing number of congenital malformations observed in Belarus most likely to be the result of the more active and improved screening for such cases.[944] Neither the Chernobyl Forum nor its precursor, the International Chernobyl Project, ever denied that the frequency of many illnesses has increased in these regions; however, they imputed these increases wholly to increases in screening and detection and improved recording methods of these diseases and to mental health problems. The exaggerated fear of radiation[945] among the population along with the stress induced by the evacuations and resettlements, the breakup of the Soviet Union, and the social and economic upheaval that accompanied it, and not radioactive exposure, were given as the real causes of the health '*legacy*' attributed to Chernobyl. Accordingly, the 2006 report by the Chernobyl Forum advocated re-settling the regions that had been evacuated in the late 1980s and phasing out any 'Chernobyl-related benefits and privileges'. The Chernobyl Forum considered the negative health effects of low-level radiation to be negligible and therefore argued that '*the majority of the "contaminated" territories are now safe for settlement and economic activity.*'[946] One of the main reasons why the radioactive fallout could not be said to have been responsible for the increase in illnesses lay in the simple fact

[943] The Chernobyl Forum, *Chernobyl's Legacy*, pp. 14.

[944] Compare: Ibid., pp. 19: '*These doses are also unlikely to have any major effect on the number of stillbirths, adverse pregnancy outcomes or delivery complications or the overall health of children. Birth rates may be lower in 'contaminated' areas because of concern about having children (this issue is obscured by the very high rate of medical abortions) and the fact that many younger people have moved away. No discernible increase in hereditary effects caused by radiation is expected based on the low risk coefficients estimated by UNSCEAR (2001) or in previous reports on Chernobyl health effects.*'

[945] Compare: Ibid., p. 36: '*As noted in the Chernobyl Forum report on Health,"the mental health impact of Chernobyl is the largest public health problem unleashed by the accident to date." Psychological distress arising from the accident and its aftermath has had a profound impact on individual and community behaviour. Populations in the affected areas exhibit strongly negative attitudes in self-assessments of health and wellbeing and a strong sense of lack of control over their own lives. Associated with these perceptions is an exaggerated sense of the dangers to health of exposure to radiation. The affected populations exhibit a widespread belief that exposed people are in some way condemned to a shorter life expectancy. Such fatalism is also linked to a loss of initiative to solve the problems of sustaining an income and to dependency on assistance from the state.*'

[946] Ibid, p. 8.

that '*the average doses received by residents of the territories "contaminated" by the Chernobyl fallout are generally lower than those received by people who live in some areas of high natural background radiation in India, Iran, Brazil and China*.'[947]

This report was presented to the public as the state-of-the-art of scientific research on Chernobyl, a kind of summary of what the international nuclear-scientific community had to say on the topic. The 'authority' of its member institutions[948] put the Forum in the position to automatically dismiss anything and everything that differed from the stance these experts had taken as the result of unqualified and untenable science or mere guesswork. The fact that the number of Chernobyl victims presented in this report ranks amongst the lowest estimates that can be found in the Chernobyl debate led to the protest and profound criticisms on the part of anti-nuclear and human rights activists. From their perspective, this report was the manifestation of the nuclear lobby's attempt to downplay the health effects of Chernobyl and of low-level radiation in general. The activists argued that the scientific excellence underpinning the report was spurious since many of the studies undertaken by researchers that did not strictly conform to this 'IAEA-authorized' narrative were simply ignored. According to many activists, one international institution was charged with the responsibility of listening to this independent research: the WHO. But the WHO, a participating member of the Chernobyl Forum, did not seriously take into consideration the results of this independent research and instead emphasized the psychological and not the physical impact of the radiation. In their search for an explanation as to why the WHO so assiduously focused on the psychological instead of physical effects, several anti-nuclear activists came across a document that offered space for reflections on the underlying reasons for this behaviour, reasons that had nothing to do with scientific evidence: this document was the IAEA-WHO Agreement of 1959.

The IAEA-WHO Agreement

The agreement between the IAEA and the WHO of 1959 became a major reference point in the transnational Chernobyl debate in recent years. It is considered by many anti-nuclear activists to be the reason why the WHO has always so determinedly focused on the psychological instead of

[947] Ibid, p. 13.

[948] Regarding the Chernobyl Forum's member institutions, the most important studies in relation to Chernobyl are the UNSCEAR report of 2000 (which the Chernobyl Forum report quotes very often), the UNDP / UNICEF report of 2002, and the WH report of 2006. See: UNSCEAR, *Sources and Effects on Ionizing Radiation, UNSCEAR 2000 Report to the General Assembly with Scientific Annexes. Annex J: Exposures and effects of the Chernobyl accident* (New York: United Nations, 2000); UNDP and UNICEF, *The human consequences of the Chernobyl Nuclear Accident – A Strategy for Recovery* (New York: UNDP, 2002); WHO, *Health Effects of the Chernobyl Accident and Special Health Care Programmes, Report of the UN Chernobyl Forum Expert Group 'Health'* (Geneva: WHO, 2006).

physical effects in its evaluation of Chernobyl health effects. The 'discovery' of this agreement led to the birth of a movement that calls for a 'free and independent WHO', i.e. a WHO that is independent from the nuclear lobby and as such capable of revealing to the world the 'truth' about Chernobyl which, in the opinion of these activists, the IAEA has thus far succeeded in covering up.

Regarding the role that the anti-nuclear activists have allocated to the IAEA-WHO Agreement in their arguments, it is interesting to return once more to the foreword written by Rebecca Harms for the TORCH-report. In this foreword, she wrote the following statement: '*When the IAEA in September 2005 released two reports on the environmental effects (coordinated by the IAEA) and health impacts (coordinated by the WHO) of the Chernobyl accident, numerous people and NGOs were suspicious about intentions and content. The IAEA is not neutral. Its primary role, as defined on its website, is "to promote safe, secure and peaceful nuclear technologies". The IAEA led interagency cooperation with the WHO is not a coincidence. An 1959 agreement between both organisations stipulates: "Whenever either organization proposes to initiate a program or activity on a subject in which the other organization has or may have a substantial interest, the first party shall consult the other with a view to adjusting the matter by mutual agreement." The term is well chosen: "adjusting the matter"*.'[949]

Before considering more carefully the line of arguments that has been constructed around this agreement, it is important to provide some information on the content of this agreement, as it is in its written form: On 28 May 1959, the *World Health Assembly* approved an agreement negotiated between the WHO and the IAEA that was intended to regulate the interaction of the two agencies. As the General Conference of the IAEA had already ratified the agreement on 1 October 1958, this agreement entered into force the very next day, on 29 May 1959.[950] Alongside such practical aspects as the co-operation in technical or administrative fields (Article VI), reciprocal representation (Article II) or the collection and exchange of statistical data (Article VII), this agreement also regularized the modalities of co-operation and consultation between the two agencies with regard to their topics in general. This was located in Article I of the agreement, which is quoted in its entirety below:

'*ARTICLE I: Co-operation and Consultation*

1. *The International Atomic Energy Agency and the World Health Organization agree that with a view to facilitating the effective attainment of the objectives set forth in their respective*

[949] Fairlie and Summer, *The Other Report on Chernobyl*, p. 4.
[950] Protocol of the IAEA-WHO Agreement: http://www.iaea.org/Publications/Documents/Infcircs/Others/inf20.shtml#note_c (last accessed: 15 November 2013).

constitutional instruments, within the general framework established by the Charter of the United Nations, they will act in close co-operation with each other and will consult each other regularly in regard to matters of common interest.

2. *In particular, and in accordance with the Constitution of the World Health Organization and the Statute of the International Atomic Energy Agency and its agreement with the United Nations together with the exchange of letters related thereto, and taking into account the respective co-ordinating responsibilities of both organizations, it is recognized by the World Health Organization that the International Atomic Energy Agency has the primary responsibility for encouraging, assisting and co-ordinating research and development and practical application of atomic energy for peaceful uses throughout the world without prejudice to the right of the World Health Organization to concern itself with promoting, developing, assisting and co-ordinating international health work, including research, in all its aspects.*
3. *Whenever either organization proposes to initiate a program or activity on a subject in which the other organization has or may have a substantial interest, the first party shall consult the other with a view to adjusting the matter by mutual agreement.'*[951]

The fact that such an agreement exists is not in itself exceptional. The IAEA as well as the WHO have concluded a range of agreements with other international organizations, as is normal in the field of international relations.[952] This, incidentally, was the explanation the WHO Information Office gave to concerned journalists in 2001, when these last had begun to investigate in this agreement: '*The Agreement between WHO and IAEA follows the model of agreements concluded between WHO and the United Nations or other international organizations […] Such commitment does not in any way imply a submission of one organization to the authority of the other so as to affect their independence and responsibilities under their respective constitutional mandates.*'[953] But many activists do not believe that this official classification as 'normal working agreement' applies. For example, in an open letter to the Director of Public Health and Environment of the WHO, the NGO *Women in Europe for a Common Future* (WECF) argued that '*the wordings of the WHO-IAEA Agreement of 1959 are not the same as the wordings in agreements concluded by the WHO with other organizations, e.g. FAO, UNESCO or UNIDO. The WHO/FAO Agreement of 1948 requests*

[951] Article I of the IAEA-WHO Agreement: Ibid.
[952] For the IAEA Relationship Agreements with Specialized Agencies, see: http://www.iaea.org/Publications/Documents/Infcircs/Others/inf20.shtml# (last accessed: 15 November 2013).
[953] WHO Information Office, *Statement WHO/06: 'Interpretation of the World Health Organization's agreement with the International Atomic Energy Agency*, 23 February 2001: http://www.who.int/inf-pr-2001/en/state2001-05.html (last accessed: 15 November 2013).

the two organizations to "consult each other regularly in regard to matters of common interest", which undoubtedly does not go so far as the WHO/IAEA Agreement of 1959 does by requiring consultations "with a view to adjusting the matter by mutual agreement".'[954]

In order to assess the importance of the different wording in the every-day-work of these organizations, it is necessary to conduct research that goes far beyond the scope of this study. Moreover, no statement can be given here as to whether the WHO-IAEA Agreement actually prevents the WHO from researching and publishing on the physical health effects of radiation. Any answer to such a question would necessitate a detailed understanding of the work process and cooperation between these two organizations. However, the question in this study is how this agreement has been used over the last few years in the debate over the Chernobyl health effects: The WHO-IAEA Agreement has become one of the most important arguments used by the anti-nuclear side to call into question the official number of Chernobyl victims that was provided by expert groups like the International Chernobyl Project or the Chernobyl Forum. All of these evaluations were based on research conducted by WHO experts and have been systematically promoted as independent expertise, compiled by people without any links to the nuclear industry. However, if the WHO-IAEA Agreement is interpreted as a 'gag contract', an entirely different interpretation of the claims made by these 'independent expert groups' comes to the force. At the same time, it offers a convenient explanation as to why the WHO never took a strong stance in the nuclear debate nor specifically supported research on health effects of low-level radiation.

This interpretation has been fostered predominantly by activists of the group *Independent WHO*. Ever since the April 2007 Chernobyl anniversary, this group has organized a permanent vigil at the WHO headquarters in Geneva to raise awareness for this issue amongst people working for and visiting the WHO.[955] A central reason for why the campaign against the WHO-IAEA Agreement is so closely linked to the Chernobyl debate lies in the fact that the founding members of *Independent WHO* are contemporaneously the most prominent critical voices in the French as well as in the transnational debate on Chernobyl health effects: Enfants de Tchernobyl Bélarus (an association founded by some of the most important transnational Chernobyl activists: Solange and Michel Fernex, Vassily Nesterenko, Galia Ackerman, and Wladimir Tchertkoff), the CRIIRAD, and the Rés*eau: Sortir du nucléaire*. The fact that the Swiss section of the IPPNW is a founding member o f *Independent WHO* has to do with Michel Fernex's central role in this campaign. Fernex, an Emeritus Professor at the Faculty of Medicine in Basel and a member of the IPPNW, is not only a

[954] Women in Europe for a Common Future, *Re: WHO/IAEA Agreement of 1959*: www.wecf.eu/download/2010/04/letterIAEA-WHO.pdf (last accessed: 15 November 2013).

[955] For further information on this campaign, see: http://independentwho.org/en/the-collective-independentwho/ (last accessed: 15 November 2013).

prominent and well connected anti-nuclear campaigner, he is also the driving force behind *Independent WHO* and at the same time the medical expert most often quoted with regard to the IAEA-WHO Agreement, including Rebecca Harms in her foreword to the TORCH-report.[956]

Due to the important role that many French anti-nuclear activists have played in the work of *Independent WHO*, the IAEA-WHO Agreement has gained much visibility in the French Chernobyl debate. For instance, the prominent French anti-nuclear activist and long-term spokesperson of *Réseau: Sortir du nucléaire*, Stéphane Lhomme, openly integrated the agreement into his argument in his 2006 publication: *L'insécurité nucléaire: bientôt un Tchernobyl en France*.[957] Beyond the circles of French anti-nuclear activists, a broader public learned of this agreement through a detailed article written by Alison Katz, which was published in 2008 in the widely-read magazine *Le Monde Diplomatique*.[958] The debate over the IAEA-WHO Agreement has gained such popularity in France that even pro-nuclear activists feel obliged to refer to it in their Chernobyl accounts – albeit, mainly to dismiss the manner in which anti-nuclear activists have framed this agreement, classifying the claims of these last as un unfounded conspiracy theory. Anne Lauvergeon's comment in her book *La troisième révolution énergétique* is an illustrative example of this: '*The rejection of these findings [the non-existence of a causal link between Chernobyl fallout and an increase in thyroid cancer in a country like France] by anti-nuclear activists could lead to the belief that these findings are the results of a complot orchestrated by international and national authorities, like the WHO, UNDP and IAEA. Maybe, but I ask a simple and stupid question, what would be the aim of such a conspiracy? [...] Since the drama of Chernobyl, the cumulated running time of all nuclear reactors in the world represents 9,000 years without accident. Which other industrial sector can assert such a balance?*'[959]

Criticism of the IAEA-WHO Agreement has also begun to spread to the transnational debate on Chernobyl health effects, especially through networks like the IPPNW. For instance, there is a Spanish *Wikipedia* article on the IAEA-WHO Agreement.[960] Although the *Wikipedia* article on the

---

956 Fairlie and Summer, *The Other Report on Chernobyl*, p. 4.

957 Lhomme, *L'insécurié nucléaire*, pp. 196.

958 Alison Katz, "Les dossiers enterrés de Tchernobyl," in *Le Monde diplomatique,* March 2008: http://mondediplo.com/2008/04/14who (last accessed: 15 November 2013).

959 Lauvergeon and Jamard, *La troisième révolution énergétique*, pp. 133: '*La réfutation de ces données par les antinucléaires pourrait laisser croire qu'elles sont le fruit d'un complot orchestré par les organismes nationaux et internationaux comme l'OMS, le PNUD, l'AIEA. Soit, mais je pose une question toute bête, dans quel but se livreraient-ils à une telle conspiration? Les autorités et l'industrie mondiales ont tiré les leçons de la catastrophe. […] Les réacteurs de la troisième génération proposées aujourd'hui au marché comportent les innovations majeures en matière de sûreté. C'est particulièrement vrai du modèle EPR d'AREVA. […] Quant aux centrales de deuxième génération existantes, les résultats sont là. Depuis le drame de Tchernobyl, le temps de fonctionnement cumulé de l'ensemble des réacteurs nucléaires en service dans le monde représente plus de 9 000 années sans accident. Quel autre secteur industriel peut se prévaloir d'un tel bilan?*'

960 Wikipedia, *Acuerdo WHA12-40 entre la OIEA y la OMS de 1959*: http://es.wikipedia.org/wiki/Acuerdo_WHA12-40_entre_la_OIEA_y_la_OMS_de_1959 (last accessed: 15 November 2013).

Independent WHO only exists in French, it still illustrates that the campaign is supported by various international critical Chernobyl voices: one picture, for instance, shows Chris Busby participating in the permanent vigil at the WHO headquarters.[961] Thus, with regard to the actors involved and the issues at stake, the debate over the IAEA-WHO Agreement can be considered to be the incarnation of the transnational Chernobyl debate: anti-nuclear activists from Eastern and Western Europe campaign together against the international public authorities and call into question not only the very basic premise of the global nuclear enterprise – i.e. that there are no effects of low-level radiation exposure, as posited in the risk assessments carried out by the mainstream scientific community – but also the way in which the international experts 'did (and do) science'.

[961] Wikipedia, *Independent WHO*: http://fr.wikipedia.org/wiki/Independent_WHO (last accessed: 15 November 2013).

3.4 Conclusions drawn from the analysis of the transnational Chernobyl debate

In 2006, on the occasion of the 20th anniversary, anti-nuclear campaigners around the globe engaged in the debate on the Chernobyl health effects within the framework of the 'nuclear renaissance' – which was advocated by the nuclear sector as well as by various national and international political and scientific elites – and the contested official evaluations of the accident's impact published by international organizations. Any statement on the health impact of Chernobyl is the direct result of a particular way to assess and evaluate the risk of low-level radiation exposure. The question of health effects from low-level radiation had been the subject of debate between pro- and anti-nuclear activists long before Chernobyl. But the question of the health effects from Chernobyl provided this controversy with a prominent public arena, and as the accident became less immediate and receded with time, the question of the radiation's long-term health effects progressively became more of a topic of scientific research. In 2011, the events in Fukushima in concomitance with the 25th anniversary of Chernobyl fostered a further intensification of the debate on the health effects of exposure to low-level radiation. At the same time, the debates on the health effects of Chernobyl and the debates on the health effects of Fukushima became tightly interwoven as the evaluation of the health effects and dose limits that had been applied in Japan elicited calls for comparisons with Chernobyl. As the film by the WNA shows clearly, the comparison between Chernobyl and Fukushima became a central argument in transnational pro-nuclear post-Fukushima campaigning, as well. And also in various national contexts, pro-nuclear campaigners and the critical voices of the Chernobyl debate have played a prominent role in the public Fukushima debates and the evaluations of the accident.

Through its role in the official evaluation of the Chernobyl health effects and the debate about the IAEA-WHO Agreement, the IAEA increasingly came to be more of a focal point of transnational anti-nuclear criticism. But the argument about the IAEA-WHO Agreement is not the only aspect that spread transnationally through the actors of the Chernobyl debate. Other anti-nuclear arguments, like the cover-up of the accident at Mayak, have made their way into various national nuclear debates also through the transnational reception of critical voices of the Chernobyl debate.

As the debate on the Yablokov-Nesterenko Report makes particularly clear, the transnational Chernobyl debate is not just concerned with a controversy on certain types of scientific reasoning and scientific findings. What is disputed here is actually the very way science is being conducted. Critical voices in the Chernobyl debate have argued against the language used in the official experts' assessments, their focus on anonymous cohorts instead of individual victims, and the various

comparisons applied to the death toll such as the smoking-topos and the 'natural' background radiation argument. Moreover, what many of the critical voices of the transnational Chernobyl debate have challenged is the way in which the official findings are produced with regard to possible political restraints placed on certain studies, and importantly, to the very way in which the scientific studies are carried out. In this regard, the question of whether or not the focus should be placed on the individual or on an anonymous cohort has grown in importance. At the same time, this question indicates that there is a clash between two competing ways to analyse the health impact of Chernobyl: a toxicological approach that focuses on the impacts of a toxic agent on an individual body, and a model-based epidemiological approach that focuses on the probabilistic effects in an exposed group of people and comparisons between this last and a control group. As Kate Brown has shown in her work on Mayak, these two contrasting ways to evaluate the health effects of a radioactive contamination existed long before Chernobyl ever occurred. In the case of Mayak, the initial toxicology-based approach taken by local Soviet doctors led them to frame their findings with the concept of 'chronic radiation syndrome'. But their work was dismissed by Western, mostly American, epidemiologists.[962] Yet, the concept of 'chronic radiation syndrome' has once more been taken up, this time in the Chernobyl debate by Eastern European physicians like Vassily Nesterenko and Yuri Bandazhevsky, who have diagnosed this illness in children living in the most affected regions.

The uncertainties regarding the health effects of systematic exposure to low-level radiation have resulted in various scientific endeavours into this highly politicized field. The leukaemia cluster studies around nuclear power and reprocessing plants are a prominent example, but are, at the same time, a highly contested one, not least because of the openly political background and the political aim of these studies. In the evaluation of the long-term health effects of Chernobyl, the same questions of causal links and accountability are asked. These will remain the same even in the case of Fukushima as the debates on its effects unfolds in the years to come. The results obtained through research on the effects of the radiation on the Hiroshima and Nagasaki survivors were the basis upon which the models and parameters that are the basis of today's radiation safety policies were established. This however has been criticized and challenged by the transnational nuclear activists of the Chernobyl debate insofar as, according to them, the results of these models cannot and do not apply to the Chernobyl context. Chris Busby's and Alexey Yablokov's work, which aims to call into question these existing ICPR models are probably the most prominent examples of this wider frame of reference within which the debate on Chernobyl health effects is embedded. In this regard, the transnational Chernobyl debate has become a proxy war over the validity of

[962] I am thankful to Kate Brown for discussing this topic with me.

international standards and models of radiation protection. Whether the international efforts to fill the knowledge gap on the health effects of low-level radiation which are currently being carried out, for instance within the framework of the *Multidisciplinary European Low Dose Initiative* (MELODI),[963] will change the arguments of the actors of the transnational Chernobyl debate has yet to be seen.

For the time being, keeping the Chernobyl debate alive will continue to be a task of the utmost importance for anti-nuclear campaigners and the Chernobyl solidarity movement.[964] Efforts to network and transnationalize the commemoration of Chernobyl, such as *Chernobyl Day* and the *European Chernobyl Network*, stem from the fear that Chernobyl is being forgotten, and with it its victims and the dangers of nuclear power that they have come to symbolize. If the plans to resettle the evacuated zones are pushed forward, as well as the additional plans to transform the forbidden zone into a nature discovery park,[965] Chernobyl will essentially disappear as a geographic reference point. Without this physical symbol, all of the Chernobyl campaigning by the anti-nuclear networks and the solidarity movement would have to be reconceptualized. Key elements of the imagery used to render the consequences of the radioactive fallout visible – i.e., the abandoned villages, the ghost town of Pripyat – would no longer exist. It seems unlikely that the transnational anti-nuclear movement would continue to be able to effectively point to Chernobyl as a means to strengthen their position. And if the memory work conducted by these groups should cease to be carried out, Chernobyl would also soon cease to be 'alive' as a site of memory and would disappear from the collective memory. In a national context, the memory might continue to be accessible, but as has been shown, these national memories have very different implications, and this would make it extremely difficult for the anti-nuclear movement and the Chernobyl solidarity movement to find universal guiding principles in these disparate forms of recollection. As a tourist attraction, interest in the power plant and the city of Pripyat might continue to grow in appeal. However, it is unclear whether these locations would then offer more to visitors than merely the experience of visiting industrial ruins and a ghost town.

---

963 For further information on the platform MELODI, which was funded in 2010 and unites 15 European radiation safety agencies and research institutes, see: http://melodi-online.eu/index.html (last accessed: 15 November 2013). The first concrete project that was conducted in this framework is the Open Project for European Radiation Research Area (OPERRA), financed through Euratom by the European Commission and coordinated by the French IRSN and the German BfS. For a project presentation, see: http://melodi-online.eu/doc/OPERRA_%20Call_Launch_Meeting_Brussels_20012014%20%5BSchreibgesch%C3%BCtzt%5D.pdf (last accessed: 15 November 2013).

964 The following paragraphs are an adaption of the conclusion of my article: Kalmbach, *Chernobyl as a National and Transnational Site of Memory*, pp. 157.

965 The final report of the Chernobyl Forum presented a proposal '*to explore the possibilities for promoting specialized ecological tourism*' (Chernobyl Forum, *Chernobyl's Legacy*, p. 57). The proposal is inspired by the fact that endangered animal species such as wild horses and wolves have flourished due to the lack of human activity in the restricted zone for many years.

Chernobyl might very well cease to be a guiding reference for reasons other than the disappearance of the geographical reference point that serves today as a concrete physical reminder of the event, as reactions to Fukushima in spring 2011 demonstrated. The question of whether Fukushima will replace Chernobyl coloured the debates surrounding the 25th anniversary of Chernobyl. This speculation was inspired by the fact that in certain countries reactions to Fukushima had similar political effects, and similar goals to those that were pursued in 1986.[966] Yet it is already clear that the status of Chernobyl is being re-evaluated as a result of Fukushima: the narrative of a 'Soviet accident', that had been attached to the discourse surrounding Chernobyl from the beginning, is slowly being displaced by the narrative of a 'universal residual risk', since the issue of losing control over the technology, the difficulties of organizing mass evacuations, and the credibility of the operators and the public authorities as well as the information they report can no longer be explained away using Cold War rhetoric. It remains to be seen whether the narrative of the 'universal residual risk' will be accepted as a satisfactory explanation or whether it will eventually lead instead to a situation in which the entire nuclear industry is called into question.

[966] Interestingly, the imagery that has been created around the Fukushima accident adheres to the example of Chernobyl, as for example in the photographs of empty playgrounds. See in this regard: De Tijd, *Welcome to Fukushima*, 12 March 2014, p. 14.

IV AFTERWORD

Over the last few years, the question people have asked me the most with regard to my research topic was: 'What do YOU think? How many people died because of Chernobyl?' Probably one of the hardest things I had to learn while I carried out my research was to learn to answer this question with conviction: 'I have no idea!' To many people it seemed strange that I had worked for years on a topic without finding 'the truth', and even without attempting to find 'the truth'; or rather 'a black and white truth' comprised of concrete numbers and a clear division separating the truth from the false. I have to admit, it also often seemed strange even to me. These were the moments when I most doubted my research project. In these moments I received much well intentioned advice. Basically, this took the form of one or the other of two opposing strategies: One the one hand, I was given the advice that I should take a clear stance in the debate; and on the other hand, I was to take more distance from my topic. But neither of these strategies proved to be a solution. After six years of reading hundreds of accounts on the impact of Chernobyl and learning the various arguments in this debate and the different reasons why these arguments arose, I can only underline that there is no such a thing as a 'neutral' point of view; and it would not have been helpful for my research to pretend that I found this neutral point of view or to take a clear position in favour of a particular actor or stance of the debate. At the same time, to view Chernobyl only as an abstract research topic did not work either. I am emotionally involved in the debate regarding its impact, but my emotions run high for multiple reasons: I cannot claim that I am not touched when I read the stories of *Voices from Chernobyl*; and I do not think that it should be the aim of a researcher to loose all sense of empathy. But I am also emotionally affected by the arrogance with which many actors in the Chernobyl debate have brought forward their arguments, actors from both sides of the spectrum of the debate. I speak of the arrogance and absolute certainty that comes with the belief that there is only one possible point of view and that leaves no space for other arguments than one's own. Another issue I found personally very hard to deal with is the exploitation and instrumentalization of the 'Chernobyl victims' in this debate – again, by actors on both sides of the spectrum. These people have to all effects been turned into laboratory animals in the scientific debate about the health effects of low-level radiation. Whatever the health impact from Chernobyl radiation exposure has been, is or will be, it will most probably never be agreed upon. But I believe there are other, perhaps even more serious questions than identifying the exact number of the Chernobyl death toll that merit our attention when we use 'Chernobyl' as an argument in the nuclear debate, regardless of the position taken. And this central issue is the Chernobyl debate itself. It is a debate that clearly illustrates the uncertainties implicit in the applications of science and technology, uncertainties we

all must face in our daily lives, uncertainties that cannot be overcome with narrow, single faceted answers.

V DEFINITIONS OF METHODOLOGICAL TERMS

Chernobyl debate:

The way in which accounts on Chernobyl differ and contrast one another is what I refer to as the 'Chernobyl debate'. Thus, this term stands for the variety of and relation between statements, interpretations, and narratives on Chernobyl that have circulated in public discourse over time.

Chernobyl discourse:

I consider the Chernobyl debate to be a discursive field. Elements from other debates have been imported to this discursive field, which have made it possible to assign meaning to Chernobyl. This discursive field can be considered to be the wider frame of reference within which Chernobyl has been interpreted. The most prominent of these related issues are: the national nuclear polities/politics/policies, the general debates on the health effects of low-level radiation, and the Cold War setting or context.

Chernobyl narrative:

A 'Chernobyl narrative' is a statement on Chernobyl made by an actor. A narrative consists of many different elements, of which the following are central to this analysis: self-affectedness, 'radiophobia' versus 'apocalypse', and anti-Soviet/anti-Eastern European stereotypes. These narrative elements reflect a certain position within the debates on national nuclear polities/politics/policies, the general debates about health effects of low-level radiation, and the Cold War setting or context.

Context:

The primary contextual elements within which I locate the national Chernobyl debates are: the formation, role and status of nuclear 'experts' and 'counter experts'; the changes to the national nuclear politics, policies and polities as well as to their pro-nuclear versus anti-nuclear orientation during the researched time span; the shape, political role and protest culture of the anti-nuclear movement; (the problematic issues of) the national fleet of nuclear power plants; and the importance of charities.

Actor clusters:

The following four clusters constitute the basic structural reasons underpinning an actor's involvement in the Chernobyl debate: public authorities (government, radiation protection

agencies); nuclear industry (companies, associations); anti-nuclear groups; Chernobyl solidarity movement groups.

VI LIST OF ABBREVIATIONS

AEA – Atomic Energy Agency (short for: UKAEA)

AERO – 'Alternative' Environmental Research Organisations

ACRO – Association pour le contrôle de la radioactivité dans l'Ouest

AFMT – Association française des malades de la thyroïde

AFP – Agence France-Presse

AGR – Advanced gas-cooled reactor

AIEA – Agence internationale de l'énergie atomique (= IAEA)

ANT – Actor-Network Theory

ASN – Autorité de sûreté nucléaire

BL – British Library

BNF – Bibliothèque nationale de France

BNFL – British Nuclear Fuels Limited

CEA – Commissariat à l'énergie atomique

CIRC – Centre international de recherche sur le cancer (= IARC)

CEGB – Central Electricity Generating Board

CERRIE – Committee Examining Radiation Risks from Internal Emitters

CNRS – Centre national de la recherche scientifique

COGEMA – Compagnie générale des matières nucléaires

CORE – Cooperation for Rehabilitation

CORE – Cumbrians Opposed to a Radioactive Environment

CRIIRAD – Commission de recherche et d'information indépendantes sur la radioactivité

DGEMP – Direction génerale de l'Eénergie et des matières premières

DGSNR – Direction générale de la sûreté nucléaire et de la radioprotection

DGS – Direction générale de la santé

DoE – Department of the Environment

DSIN – Direction de la sûreté des installations nucléaires

ECRR – European Committee on Radiation Risk

EDF – Électricité de France

EPR – European Pressurized Water Reactor

ETB – Enfants de Tchernobyl Bélarus

EU – European Union

FAO – Food and Agriculture Organisation

FEFU – Fédération Échanges France-Ukraine

FoE – Friends of the Earth

FRAMATOME – Société franco-américaine de constructions atomiques

GSIEN – Groupement des scientifiques pour l'information sur l'énergie nucléaire

HPA – Health Protection Agency

HSMO – Her Majesty's Stationery Office

IARC – International Agency for Research on Cancer (= CIRC)

IAEA – International Atomic Energy Agency (= AIEA)

ICRP – International Commission on Radiological Protection

IGO – International Governmental Organisation

INA – Institut national de l'audiovisuel

InVS – Institut de veille sanitaire

INES – International Nuclear and Radiological Event Scale

IPPNW – International Physicians for the Prevention of Nuclear War

IPSN – Institut de protection et de sûreté nucléaire

IRSN – Institut de radioprotection et de sûreté nucléaire

MAFF – Ministry of Agriculture, Fisheries and Food

NAIIC – Nuclear Accident Independent Investigation Commission

NGO – Non-governmental Organisation

NII – Nuclear Installations Inspectorate

NRPB – National Radiological Protection Board

OECD – Organisation for Economic Co-operation and Development

OPRI – Office de protection contre les rayonnements ionisants

OMS – Organisation mondiale de la Santé (= WHO)

PACA – Région Provence-Alpes-Côte d'Azur

PNUD – Programme des Nations Unies pour le développement (=UNDP)

PS – Parti socialiste

PWR – Pressurized Water Reactor (= REP)

RBMK – Reaktor Bolshoy Moshchnosti Kanalniy

REP – Réacteur à eau pressurisée (= PWR)

RIMNET – Radioactive Incident Monitoring Network

SCPRI – Service central de protection contre les rayonnements ionisants

SCRAM – Scottish Campaign to Resist the Atomic Menace

STS – Science, Technology, and Society Studies

TASS – Tyelyegrafnoye agyentstvo Sovyetskogo Soyuza

TORCH – The Other Report on Chernobyl

UKAEA – United Kingdom Atomic Energy Authority

UNDP – United Nations Development Programme

UNEP – United Nations Environment Programme

UN-OCHA – United Nations Office for the Coordination of Humanitarian Affaires

UNSCEAR – United Nations Scientific Committee on the Effects of Atomic Radiation

WHO – World Health Organisation (= OMS)

WISE – World Information Service on Energy

VII BIBLIOGRAPHY AND SOURCES

A2, "Tchernobyl: rétro des mensonges," in *A2 Dernière*, 12 May 1986.

A2, Interview with Alain Carignon, in *MIDI 2*, 11 May 11 1986.

A2, Interview with François Cogné, in *MIDI 2*, 29 April 1986.

A2, Interview with Pierre Tanguy, in *MIDI 2*, 30 April 30 1986.

Abbott, Pamela / Wallace, Claire / Beck, Matthias, "Chernobyl: Living with Risk and Uncertainty," in *Health, Risk & Society* 8, 2 (2006): 105–121.

Ackerman, Galia / Grandazzi, Guillaume / Lemarchand, Frédérick (eds.), *Les silences de Tchernobyl. L'avenir contaminé* (Paris: Éditions Autrement, 2006).

Ackerman, Galia, *Tchernobyl, retour sur un désastre* (Paris: Buchet/Chastel, 2006).

Akera, Atsushi, *Synopsis of the Sessions and Papers on the 2011 Fukushima / East Japan Disaster, 4S/EASST Annual Meeting*, Copenhagen Business School 17-20 October 2012, posted on: fukushima-forum@googlegroups.com.

Alexievitch, Svetlana, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (Paris: Le Club, 1999).

Alexievitch, Svetlana, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (Paris: Éditions J'ai lu, 1999).

Alexievich, Svetlana, *Voices from Chernobyl: chronicle of the future* (London: Aurum, 1999).

Alexievitch, Svetlana, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (traduit du russe par Galia Ackerman et Pierre Lorrain) (Paris: JC Lattès, 1998).

Alexievitch, Svetlana, *La supplication. Tchernobyl, chroniques du monde après l'Apocalypse* (Paris: France Loisir, 1998).

Anders, Günther (traduit de l'allemand par Christophe David), *La menace nucléaire: considérations radicales sur l'âge atomique* (Monaco: Le Serpent à plumes, 2006).

Andersen, Ralph, "Summary and Discussion of Major Findings From Chernobyl" in *Health Physics – The radiation safety journal*, 93, 5 (2007): 593-595.

Anderson, Robert, *Nucleus and Nation: Scientists, International Networks, and Power in India* (Chicago IL: University of Chicago Press, 2010).

Ardill, John, "Chernobyl leaves shadow over 270,000 sheep," in *The Guardian*, 22 April 1987, p. 2.

Arndt, Melanie (ed.), *"Anthropologischer Schock" nach Tschernobyl? Politik und Gesellschaft nach der Katastrophe* (Wien / Köln / Weimar: Böhlau, 2014, forthcoming).

Arndt, Melanie (ed.), "Memories, Commemorations, and Representations of Chernobyl" special issue of *Anthropology of East Europe Review,* 30, 1 (2012).

Arndt, Melanie, "Verunsicherung vor und nach der Katastrophe: Von der Anti-AKW-Bewegung zum Engagement für die 'Tschernobyl-Kinder'," in *Zeithistorische Forschungen* 7, 2 (2010): 240-258.

Arndt, Melanie, "Von der Todeszone zum Strahlen-Mekka? Die Erinnerung an die Katastrophe von Tschernobyl in Belarus, der Ukraine und Russland," in *Zeitgeschichte-online*, April 2006.

Arnold, Lorna, *Windscale 1957: Anatomy of a Nuclear Accident* (Basingstoke: Palgrave Macmillan, 1995).

Baker, Johan, "Obituary: Lord Marshall of Goring," in *The Independent*, 26 February 1996.

Ballard, G. M. (ed.), *Nuclear safety after Three Mile Island and Chernobyl* (London / New York: Elsevier Applied Science Publishers, 1988).

Bandajevskaya, Galina, "Comment on a réduit au silence le professor Youri Bandajevski." In *Les silences de Tchernobyl,* ed. by G. Grandazzi and F. Lemarchand (Paris: Éditions Autrement, 2004): 101-105.

Bandazhevsky, Youri I. / Bandajevskaya, Galina S., *Les Conséquences de Tchernobyl sur la santé. Le système cardiovasculaire et l'incorporation de radionucléides Cs-137* (Gap: Éditions Yves Michel, 2012).

Bandazhevsky, Youri I. / Dubovaya, N. F., Les conséquences de Tchernobyl sur la natalité. Césium radioactif et processus de reproduction (Gap: Éditions Yves Michel, 2012).

Bandazhevsky, Youri I. et al., *Tchernobyl 25 an après. Situation démographique et problèmes de santé dans les territoires contaminés* (Gap: Éditions Yves Michel, 2011).

Bandazhevsky, Youri I., *La philosophie de ma vie: journal de prison* (Paris: Jean-Claude Gawsewitch Éditeur, 2006).

Bandazhevsky, Youri I., *La philosophie de ma vie: journal de prison* (traduit du russe par Manuela Büx) (Paris: Jean-Claude Gawsewitch Éditeur, 2006).

Barthe, Yannick, *Le pouvoir d'indécision. La mise en politique des déchets nucléaires* (Paris: Economica, 2006).

Bauer, Susanne / Kalmbach, Karena / Kasperki, Tatiana, "From Pripyat to Paris, from Grassroots Memories to Globalized Knowledge Production: Local and Transnational Scales of Chernobyl." In *Nuclear Portraits*, ed. by Laurel MacDowell (Toronto: Toronto University Press, forthcoming).

Beck, Ulrich, "The Anthropological Shock: Chernobyl and the Contours of the Risk Society," in *Berkeley Journal of Sociology. A Critical Review* 32 (1987): 153-165.

Beck, Ulrich, *Risikogesellschaft* (Frankfurt am Main: Suhrkamp, 1986).

Beesley, Ian, *Orphans of the fallout: Zhitkovitchi Orphanage Belarus* (The Darkroom Press, 2001).

Behrisch, Lars, "Political Economy and Statistics in the Late Ancien Régime." In *Writing Political History Today*, edited by W. Steinmetz / I. Gilcher-Holtey / H.-G. Haupt (Frankfurt a. M. / New York: Campus, 2013): 175-190.

Belbéoch, Bella / Belbéoch, Roger, *Tchernobyl, une catastrophe. Quelques éléments pour un bilan* (Éd. Allia: Paris, 1993). A re-edition of the book is envisaged and the text is available online: http://www.dissident-media.org/infonucleaire/Tchernobyl_une_catastrophe_1993.pdf.

Belbéoch, Bella / Belbéoch, Roger, "Tchernobyl, une catastrophe. Quelques éléments pour un bilan," in *L'Intranquille, une libre contribution à la critique de la servitude*, 1 (1992): 267-373.

Belbéoch, Bella, "Le complot international," in *Écologie*, 371 (1986).

Bess, Michael, *The Light-Green Society. Ecology and Technological Modernity in France, 1960-2000* (Chicago IL: University of Chicago Press, 2003).

Bess, Michael, "Ecology and Artifice: Shifting Perceptions of Nature and High Technology in Postwar France," in *Technology and Culture* 36, 4 (1995): 830-862.

Bickerstaff, Karen et al., "Reframing Nuclear Power in the UK Energy Debate. Nuclear Power, Climate Change and Radioactive Waste," in *Public Understanding of Science* 17 (2008): 145-69.

Bigot, Bernard, *Point sur les conséquences sanitaires de l'accident de Tchernobyl* (CEA, 2005), available online: http://www.cea.fr/energie/accident-de-tchernobyl-reperes/pour-en-savoir-plus.

Blanchard, Philippe, *Les médias et l'agenda de l'électronucléaire en France, 1970-2000* (Université Paris-Dauphine: PhD dissertation, 2010).

Bohn, Thomas / Feldhoff, Thomas / Gebhardt, Lisette / Graf, Arndt (eds.), *The impact of disaster: social and cultural approaches to Fukushima and Chernobyl* (forthcoming).

Bohn, Thomas, “From Recording the Catastrophe to Tackling the Trauma: Chernobyl in (Post-) Soviet Documentary Literature.” In *The Impact of Disaster*, ed. by T. Bohn et al., forthcoming.

Bolouri, Yvonne, “Nuclear family of love,” in *The Sun,* 25 April 2006.

Bonnett, P. J. P., *Transport mechanisms and rates for long lived Chernobyl deposits in Mid-Wales* (AEA Technology Environment and Energy, 1991).

Bonß, Wolfgang, *Vom Risiko. Ungewißheit und Unsicherheit in der Moderne* (Hamburg: Hamburger Edition, 1995).

Boudia, Soraya / Jas, Natalie, *Powerless Science? Science and Politics in a Toxic World* (New York: Berghahn Books, 2014).

Boudia, Soraya / Jas, Natalie, “Risk and 'Risk Society' in Historical Perspective” special issue of *History and Technology* 23, 4 (2007).

Boudia, Soraya, “Sur les dynamiques de constitution des systèmes d'expertise scientifique: le cas des rayonnements ionisants,” in *Genèses* 70, 1 (2008): 26-44.

Boudia, Soraya, “Global regulation: Controlling and Accepting Radioactivity Risks,” in *History and Technology* 23, 4 (2007): 389-406.

Bourdieu, Pierre / Passeron, Jean-Claude, *Les Héritiers – Les étudiants et la culture* (Paris: Éditions de Minuit, 1964).

Bouvier, Yves, “Risques perçus et risques industriels. Le nucléaire en France.” In *Risques et prises de risques dans les sociétés industrielles*, ed. by D. Varaschin (Bruxelles: Peter Lang, 2007): 139-150.

Boyer, Paul S., *By the Bombs Early Light. American Thought and Culture at the Dawn of the Atomic Age* (New York: Pantheon, 1985).

British Nuclear Energy Society, *Chernobyl: a technical appraisal. Proceedings of the seminar organized by the British Nuclear Energy Society held in London on 3 October 1986* (London: Telford for the British Nuclear Energy Society, 1987).

Brown, Andrew, *Keeper of the Nuclear Conscience. The Life and Work of Joseph Rotblat* (Oxford: Oxford University Press, 2012).

Brown, Jennifer, “The impact of television coverage on the United Kingdom public following the Chernobyl nuclear accident.” In *Television and Nuclear Power. Making the Public Mind*, ed. by J.M. Wober (Norwood: Ablex Publishing Corporation, 1992).

Brown, Kate, *Plutopia. Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (Oxford: Oxford University Press, 2013).

Brown, Paul, “Welsh sheep farmers suffer new clampdown over Chernobyl accident,” in *The Guardian*, 18 September 1987, p. 2.

Brown, Paul, “Labour at odds over nuclear power,” in *The Guardian*, 1 May 1986, p. 20.

Brüggemeier, Franz-Josef, *Geschichte Großbritanniens im 20. Jahrhundert* (München: Beck, 2010).

Buie, Elizabeth, “Cancer island inquiry Health board to probe GPs’ fears of Chernobyl or Sellafield link to Benbecula deaths,” in *The Herald Scotland*, 1 April 1996.

Bürkner, Daniel, “Eine vollkommen neue Realität: Transgression des Wahrnehmbaren in den Bildern Tschernobyls.” In *Maßlose Bilder: Visuelle Ästhetik der Transgression*, ed. by I. Reichle / S. Siegel / A. Spelten (München: Wilhelm Fink, 2009): 189-206.

Busby, Chris, “A personal statement by Chris Busby. Fukushima, Calcium Supplements, the Christopher Busby Foundation for the Children of Fukushima, George Monbiot et al: The Real Target; the Real Strategy,” 23 November 2011: http://llrc.org/epidemiology/subtopic/monbiot21nov2011.htm.

Busby, Chris, *The wings of death: nuclear pollution and human health* (Aberystwyth: Green Audit Books, 1995).

Busby, Chris / Yablokov, Alexey (eds.), *Chernobyl 20 years on: health effects of the Chernobyl accident* (Aberystwyth: Published on behalf of the ECRR by Green Audit, 2006).

Busby, Christopher / Scott Cato, Molly, "Increases in Leukemia in Infants in Wales and Scotland Following Chernobyl: Evidence for Errors in Statutory Risk Estimates," in *Energy and Environment* 11, 2 (2000), p. 127-139, available online: http://www.llrc.org/wobblyscience/subtopic/infleuk.htm.

Camplin, W. C. / Great Britain Directorate of Fisheries Research, *Radioactivity in freshwater systems in Cumbria (UK) following the Chernobyl accident* (MAFF, 1989).

Carson, Cathryn, *Heisenberg in the Atomic Age. Science in the Public Sphere* (Cambridge: Cambridge University Press, 2010).

Castanier, Corinne, "Contamination des sols français par les retombées de l'accident de Tchernobyl – les preuves du mensonge." In *Contaminations radioactives: atlas France et Europe*, ed. by CRIIRAD / A. Paris (Barret-sur-Méouge: Éditions Yves Michel, 2002).

Cawse, P. A. / Baker, S. J., *A survey of radioactive caesium in British soils: comparison of accumulations pre- and post-Chernobyl* (Harwell: AEA Environment and Energy, 1990).

Cawse, P. A. / Baker, S. J., *A survey of radioactive caesium in soils of Cumbria and North Lancashire: comparison of accumulations pre- and post-Chernobyl* (Harwell: AEA Environment and Energy, 1990).

CEA, *Accident de Tchernobyl: quelques repères sur le sujet*: http://www.cea.fr/energie/accident-de-tchernobyl-reperes/reperes.

Chafer, Tony, "Politics and the perception of risk: A study of the anti-nuclear movements in Britain and France," in *West European Politics* 8, 1 (1985): 5-23.

Chamberlain, A.C., *Comparisons of the emissions in the Windscale and Chernobyl accidents* (Harwell: UKAEA Atomic Energy Research Establishment Environmental and Medical Sciences Division, 1987).

Charpak, Georges / Garwin, Richard L. / Journé, Venance, *De Tchernobyl en tchernobyls* (Paris: Odile Jacob, 2005).

Chernousenko, Vladimir Mikhailovich, *Chernobyl: insight from the inside* (Berlin / London: Springer, 1991).

Chiquelin, Jacques, "Le clan de l'atome français," in *Libération*, 13 May 1986.

Clark, Michael, "John Dunster CB ARCS BSc FSRP(1922-2006),": http://www.hpa.org.uk/Publications/Radiation/MiscellaneousRadiationPublications/rad20misc_pub_DunsterObituary/.

Clarke, Lee / Chess, Caron, "Elites and Panic. More to Fear than Fear Itself," in *Social Forces* 87, 2 (2008): 993-1014.

Clarke, Robert, "Le Matin répond aux 10 questions que vous vous posez," in *Le Matin*, 2 May 1986.

Clouston, Erlend, "Legacy of night when it rained radiation," in *The Guardian*, 26 April 1996, p. 6.

CND, "Sellafield, Lybia, Chernobyl," in *The Guardian*, 7 May 1986, p. 10.

CND, "What if nuclear war was just an accident," in *The Guardian*, 2 May 1986, p. 27.

CND, "The history of CND": http://www.cnduk.org/about/item/437.

Collier, John G. / Davies, L. Myrddin, *Chernobyl* (Glouchester: Central Electricity Generating Board, 1986).

Collins, Harry / Evans, Robert, *Rethinking Expertise* (Chicago IL: University of Chicago Press, 2007).

Collins, Harry / Pinch, Trevor, *Der Golem der Technologie. Wie unsere Wissenschaft die Wirklichkeit konstruiert* (Berlin: Berlin Verlag, 2000).

Collins, Harry / Pinch, Trevor, *The Golem at Large. What you should know about Technology* (Cambridge: Cambridge University Press, 1998).

Commission of the European Communities, *An Analysis of the Print Media in Europe Following the Chernobyl Accident* (Luxembourg: Office for Official Publications of the European Communities, 1987).

Condon, Judith, *Chernobyl and other nuclear accidents* (Hove: Wayland, 1998).

Cook, Stephen, "Render unto caesium 134," in *The Guardian*, 1 June 1990, p. 23.

Cotterill, S. J. / Pearce, M. S. / Parker, L., "Thyroid cancer in children and young adults in the North of England. Is increasing incidence related to the Chernobyl accident?," in *European Journal of Cancer* 37 (8, 2001): 1020-1026.

Country Landowners' Association North Wales Group, *North Wales Group report on the effects of the Chernobyl accident* (1987).

Crié, Hélène / Lenoir, Yves, *Tchernobyl-sur-Seine*. (Paris: Calmann-Lévy, 1987).

Crié, Hélène, "La France, lanterne rouge européenne de l'information," in *Libération*, 9 May 1986.

CRIIRAD, *Tchernobyl – 20 ans après, les services officiels français persistent dans la censure et la désinformation* (Valence: CRIIRAD, 2006).

CRIIRAD, *Trait d'Union. Bulletin d'information des adhérents de la CRIIRAD*, No 32/33 (2005).

CRIIRAD / AFMT, *Communiqué joint: Mise en examen du Pr Pellerin pour tromperie aggravée dans le dossier Tchernobyl / malades de la thyroïde*, 1 June 2006.

CRIIRAD / Paris, André (eds.), *Contaminations radioactives: atlas France et Europe* (Barret-sur-Méouge: Éditions Yves Michel, 2002).

Croizé, Jean-Paul, "Le syndrome ukrainien," in *Le Figaro*, 30 April 1986.

Cunningham, John, "When lamb provides the beef," in *The Guardian*, 23 June 1986, p. 21.

Cutler, James / Edwards, Rob, *Britain's nuclear nightmare* (London: Sphere, 1988).

Darwell, John, *Legacy: photographs inside the Chernobyl exclusion zone* (Stockport: Dewi Lewis, 2001).

Darwell, John, "Legacy: inside the Chernobyl exclusion zone," in *International Journal of Epidemiology* 35 (2006): 827-831.

Daum, Christine, "Der Kriegsreporter und der Architekturfotograf. Die Tschernobyl-Fotos von Igor' Kostin und Robert Polidori," in *Osteuropa*, 56, 4 (2006): 63-70.

David-Jougneau, Maryvonne, "Semmelweis, Bandajevsky: des savants victimes de la répression scientifique." In *Les silences de Tchernobyl,* ed. by G. Grandazzi and F. Lemarchand (Paris: Éditions Autrement, 2004): 106-118.

de Pracontal, Michel, "EPR: premier débat, cahin-caha," in *Le Nouvel Observateur*, 10 November 2005.

De Tijd, *Welcome to Fukushima*, 12 March 2014, p. 14.

Department of Agriculture and Fisheries for Scotland, *Chernobyl accident: monitoring for radioactivity in Scotland* (Department of Agriculture and Fisheries for Scotland, 1990).

Department of Agriculture for Northern Ireland, *Levels of radioactivity in the UK from the accident at Chernobyl, USSR on 26 April 1986: a compilation of the results of environmental measurements in the UK* (London: HMSO, 1986).

Department of the Environment (Her Majesty's inspectorate of pollution), *Nuclear accidents overseas: the national response plan and radioactive incident monitoring network (RIMNET). A statement of proposals* (London: HMSO, 1988).

Desbordes, Jean-Philippe, *Atomic Park. À la recherche des victimes du nucléaire* (Arles: Actes Sud, 2006).

Devisse, Jean-Stéphane et al., "Débat public sur l'EPR: une crédibilité à construire," in *Les Echos*, 10 January 2005.

Ditt, Karl, "Die Anfänge der Naturschutzgesetzgebung in Deutschland und England 1935/49." In *Naturschutz und Nationalsozialismus*, ed. by J. Radkau and F. Uekötter (Frankfurt am Main: Campus, 2003): 107-144.

Ditt, Karl, "Naturschutz und Tourismus in England und in der Bundesrepublik Deutschland 1949-1980. Gesetzgebung, Organisation, Probleme," in *Archiv für Sozialgeschichte* 43, (2003): 241-274.

Ditt, Karl, "Vom Natur- zum Umweltschutz? England 1949 bis 1990." In *Natur und Umweltschutz nach 1945. Konzepte, Konflikte, Kompetenzen*, ed. by F.-J. Brüggemeier and J. I. Engels (Frankfurt am Main: Campus, 2005): 38-61.

DoE et al., *Levels of radioactivity in the UK from the accident at Chernobyl USSR, on 26 April 1986* (London: HMSO, July 1986).

Downer, John, *Nuclear Safety: A (Charlie) Brownian Notion*, Working Paper No. 07-12, University of Bristol, School of Sociology, Politics and International Studies, available onlne: http://www.bristol.ac.uk/global-insecurities/workingpapers/downer.pdf.

Dowswell, Paul, *Tchernobyl: 26 avril 1986, Dates clés de l'histoire* (Bonneuil-les-Eaux Montréal (Québec): Gamma École active, 2003).

Dowswell, Paul, *The Chernobyl disaster: 26th April 1986* (London: Hodder Wayland, 2003).

Dupuy, Jean-Pierre, *Retour de Tchernobyl: journal d'un homme en colère* (Paris: Éditions du Seuil, 2006).

Dupuy, Jean-Pierre, *Pour un catastrophisme éclairé: quand l'impossible est certain* (Paris: Éditions du Seuil, 2002).

East, B. W., *Measurement of radioactivity from Chernobyl in population groups in Scotland: report 2* (Her Majesty's Inspectorate of Pollution, 1991).

EDF, *Rapport annuel 2008* (Paris: Groupe EDF, 2009).

EDF, *Tchernobyl: le vrai, le faux et l'incertain* (Paris: EDF, 1992).

EDF, *Tchernobyl* (Dijon: EDF, 1987).

EDF, *Tchernobyl. Dossier d'information* (EDF 1986).

Edmondson, B., "The Chernobyl accident and its implications for operators of civil nuclear power plant in the UK," in *Nuclear risks: reassessing the principles and practice after Chernobyl. Conference: Papers and discussions* (London: IBC, 1987).

Edwards, Rob / D'Arcy, Susan, *Still fighting for Gemma* (Bloomsbury, 1995). The book is available online on Edwards' website: http://www.robedwards.com/2007/03/still_fighting_.html.

Edwards, Rob, "Chernobyl fall-out '40 times worse' than admitted," in *The Guardian*, 28 January 1989, p. 24.

Engels, Jens Ivo, *Naturpolitik in der Bundesrepublik. Ideenwelt und politische Verhaltensstile in Naturschutz- und Umweltbewegung 1950-1980* (Paderborn: Schöningh, 2006).

Entfants de Tchernobyl Belarus, "La plaquette réactualisée de l'association": http://enfants-tchernobyl-belarus.org/doku.php.

European Chernobyl Network, "Light a candle on 25th of April": http://www.ecnchernobyl.eu/.

European Commission , *Atlas on the caesium deposition across Europe after the Chernobyl accident* (Luxembourg: Office for Official Publications of the European Communities, 1998), available online: http://rem.jrc.ec.europa.eu/RemWeb/pastprojects/atlasfiles/TEXT/ENGLISH.PDF.

Fairhall, David, “Chernobyl factors,” in *The Guardian*, 30 April 1986, p. 23.

Fairhall, David, “Radioactive Russian dust cloud escapes,” in *The Guardian*, 29 April 1986, p. 1.

Fairhall, David / White, Michael / Tran, Mark, “Radiation cloud reaches Britain,” in *The Guardian*, 3 May 1986, p. 1.

Fairlie, Ian / Summer, David, *The Other Report on Chernobyl (TORCH)* (Berlin/Brussels/Kiev: The Greens and EFA in the European Parliament, 2006).

Farmers’s Union of Wales, *Chernobyl - the government reaction* (Farmers’ Union of Wales, 1988).

FEFU, “Portrait”: http://www.fefu.org/default.asp?voirpage=FEFU/Portrait.htm.

Fischhoff, Baruch, “The Nuclear Energy Industry's Communication Problem,” in *Bulletin of the Atomic Scientist* 2009: http://thebulletin.org/nuclear-energy-industrys-communication-problem.

Fischhoff, Baruch, “Risk Perception and Communication Unplugged: Twenty Years of Process,” in *Risk Analysis* 15, 2 (1995): 137-145.

Foasso, Cyrille, *L'Histoire de la sûreté de l'énergie nucléaire civile en France, 1945- 2000* (Université Lumière Lyon II: dissertation, 2003).

Forgrave, Andrew, “Wales: Did Chernobyl disaster cause my cancer?,” in *Daily Post*, 26 April 2006.

Fox, Robert, “Obituary: Professor Margaret Gowin,” in *The Independent*, 20 November 1998: http://www.independent.co.uk/arts-entertainment/obituary-professor-margaret-gowing-1186010.html.

France 3, *Soir 3*, 28 April 1986.

Fressoz, Jean-Baptiste, “The Gas Lighting Controversy: Technological Risk, Expertise, and Regulation in Ninteenth-Century Paris and London,” in *Journal of Urban History* 33, 5 (2007): 729-755.

Freudenberg, William R., “Perceived Risk, Real Risk: Social Science and the Art of Probabilistic Risk Assessment,” in *Science* 242 (1988): 44-49.

Frevert, Ute, *Vertrauensfragen. Eine Obsession der Moderne* (München: C.H. Beck, 2013).

Frevert, Ute, “Neue Politikgeschichte: Konzepte und Herausforderungen.” In *Neue Politikgeschichte. Perspektiven einer historischen Politikforschung*, ed. by U. Frevert and H.-G. Haupt (Frankfurt/New York: Campus 2005)

Frewer, Lynn et al., *Media reporting of risk in 5 European countries at the time of the 10th anniversary of the Chernobyl accident, Report to the European Commission* (Norwich: Institute of Food Research, 1997).

Friends of the Earth, *The Chernobyl legacy* (London: Friends of the Earth, 1991).

Friends of the Earth, “A positive message on Chernobyl from Friends of the Earth,” in *The Observer*, 11 May 1986, p. 15.

Friends of the Earth, “The accident they said would never happen,” in *The Guardian*, 6 May 1986, p. 31.

Gale, Robert Peter, *Chernobyl: the final warning* (London: Hamilton, 1988).

Gamson, William A. / Modigliani, Andre, “Media Discourse and Public Opinion on Nuclear Power: A Constructionist Approach,” in *The American Journal of Sociology* 95, 1 (1989): 1-37.

German Affiliate of International Physicians for the Prevention of Nuclear War (IPPNW) / Gesellschaft für Strahlenschutz, *Health effects of Chernobyl. 25 years after the reactor catastrophe* (Berlin: IPPNW / Gesellschaft für Strahlenschutz, April 2011), available online: http://www.ratical.org/radiation/Chernobyl/HEofC25yrsAC.html.

Ghazi, Polly, “Chernobyl fall-out may affect British farmland for decades,” in *The Observer*, 29 April 1990, p. 9.

Gittus, John et all., *The Chernobyl accident and its consequences* (London: United Kingdom Atomic Energy Authority, 1987).

Goatcher, Jeff / Brunsden, Viv, "Chernobyl and the Sublime Tourist," in *Tourist Studies* 11, 2 (2011): 115-137.

Goldsworthy, Vesna, *Chernobyl strawberries: a memoir* (London: Atlantic, 2005).

Gonzales, Abel J., "Chernobyl Vis-à-Vis the Nuclear Future: An International Perspective," in *Health Physics – The radiation safety journal*, 93, 5 (2007): 571-592.

Gould, Peter, *Fire in the Rain. The Democratic consequences of Chernobyl* (Cambridge: Polity Press, 1990).

Gowing, Margaret, assisted by Lorna Arnold, *Independence and Deterrence: Britain and Atomic Energy, 1945–1952* (London: Macmillan, 1974).

Gowing, Margaret (in collaboration with Lorna Arnold), *Britain and Atomic Energy, 1935-1945* (London: Macmillan, 1964).

Grandazzi, Guillaume, "Die Zukunft erinnern – Gedenken an Tschernobyl," in *Osteuropa*, 56, 4 (2006): 7-18.

Grandazzi, Guillaume, "L'atome en héritage." In *Les silences de Tchernobyl,* ed. by G. Grandazzi and F. Lemarchand (Paris: Éditions Autrement, 2004): 120-130.

Grandazzi, Guillaume / Lemarchand, Frédérick (eds.), *Les silences de Tchernobyl. L'avenir contaminé* (Paris: Éditions Autrement, 2004).

Grandazzi, Guillaume / Lemarchand, Frédérick, "Avant-propos." In *Les silences de Tchernobyl,* ed. by G. Grandazzi and F. Lemarchand (Paris: Éditions Autrement, 2004): 5-11.

Greenpeace, *The Chernobyl Catastrophe: Consequences on Human Health* (Amsterdam: Greenpeace, 2006).

Greenpeace France, *20 ans Tchernobyl* (Paris: Greenpeace France, 2006).

Greenpeace UK, "Hinkley strike price briefing": http://www.greenpeace.org.uk/hinkley-strike-price-briefing.

Greiner, Bernd (ed), *Erbe des Kalten Krieges* (Hamburg: Hamburger Edition, 2013).

Guihannec, Yves, "Nucléaire: les silences de la France," in *l'Express*, 16 May 1986.

Haas, Daniel, "Tschernobyl-Ausstellung – Nahaufnahmen des Leids," in *Spiegel-Online,* 3 April 2006: http://www.spiegel.de/panorama/zeitgeschichte/0,1518,druck-409586,00.html.

Halsall, Martyn, "New controls spur fall-out inquiry call," in *The Guardian*, 15 August 1987, p. 3.

Hamblin, Jacob Darwin, *Poison in the Well. Radioactive Waste in the Oceans at the Dawn of the Nuclear Age* (New Brunswick, NJ: Rutgers University Press, 2008).

Hamman, Henry / Parrott, Stuart, *Mayday at Chernobyl* (Sevenoaks: New English Library, 1987).

Harkewicz, Laura, *The Ghost of the Bomb: The Bravo Medical Program, Scientific Uncertainty, and the Legacy of U.S. Cold War Science, 1954—2005* (PhD Dissertation University of California San Diego, 2010).

Haynes, Viktor / Bojcun, Marko, *The Chernobyl disaster* (London: Hogarth, 1988).

Haywood, J. K. / Institute of Physical Sciences in Medicine, *Chernobyl: response of medical physics departments in the United Kingdom* (London: Institute of Physical Sciences in Medicine, 1986).

Health Protection Agency, *The consequences of the Chernobyl nuclear accident,* in: HPA press releases archive for 2006: http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1253205582795.

Heath, Tony, "Nuclear cloud hangs over the hills," in *The Independent*, 22 April 1996.

Heath, Tony, “Radiation checks on people in North Wales,” in *The Guardian*, 28 September 1987, p. 4.

Heath, Tony, “Farmers take Chernobyl 'hostages',” in *The Guardian*, 5 September 1986, p. 3.

Heath, Tony, “Contaminated rain sets Welsh alarms ringing,” in *The Guardian*, 7 May 1986, p. 2.

Hecht, Gabrielle, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, MA: MIT Press, 2012).

Hecht, Gabrielle, “Nuclear Ontologies,” in *Constellations,* 13, 3 (2006): 320–31.

Hecht, Gabrielle, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 1998).

Heuser, Beatrice, *Nuclear Mentalities? Strategies and Belief-systems in Britain, France and the FRG* (Basingstoke: Palgrave Macmillan, 1998).

Hickman, Leo, “What is safe to eat?,” in *The Guardian*, 29 December 2009.

Highfield, Roger, “Windscale fallout from 1957 reactor fire still affecting Cumbria,” in *The Daily Telegraph*, 25 April 2006.

Hindmarsh, Richard (ed.), *Nuclear Disaster at Fukushima Daiichi: Social, Political and Environmental Issues* (New York: Routledge, 2013).

Hogg, Jonathan / Laucht, Christoph (ed.), “British Nuclear Culture,” special issue of *The British Journal for the History of Science,* 45, 4 (2012).

Hohenemser, Christoph / Renn, Ortwin, “Chernobyl's Other Legacy. Shifting Public Perceptions of Nuclear Risk,” in *Environment* 30, 3 (1988): 5-11, 40-45.

Holloway, David, *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939-1956* (New Haven: Yale University Press, 1994).

Hooper, John, “Britain sticks to policy,” in *The Guardian*, 1 May 1986, p. 8.

House of Commons Agricultural Committee, *Chernobyl – The Government's response, supplementary memorandum by the MAFF*, June 1988.

Hull Daily Mail, “We won‘t forget Chernobyl victims,” 25 April 2006.

Hunt, Liz, “Chernobyl link to cancer cluster on Scottish island,” in *The Independent*, 31 March 1996.

IAEA, “Protocol of the IAEA-WHO-Agreement”: http://www.iaea.org/Publications/Documents/Infcircs/Others/inf20.shtml#note_c.

IAEA, “Statute of the IAEA, Article III, Paragraph A1”: http://www.iaea.org/About/statute_text.html.

IARC, “Agenda for Research on Chernobyl Health”: http://arch.iarc.fr/who/expert.php.

IBC Technical Service, *Nuclear risks: reassessing the principles and practice after Chernobyl. Conference: Papers and discussions* (London: IBC, 1987).

ICRP, “H John Dunster CB ARCS BSc FSRP 1922-2006”: http://www.icrp.org/page.asp?id=101.

Independent on Sunday, “Chernobyl 'still causing cancer in British children,'” 23 April 2006.

IndependentWHO, “The collective IndependentWHO”: http://independentwho.org/en/the-collective-independentwho/.

Ingram, Scott, *The Chernobyl nuclear disaster* (New York / London: Facts On File, 2005).

Internationales Bildungs- und Begegnungswerk Dortmund (ed.), *Tschernobyl und die europäische Solidaritätsbewegung* (Norderstedt: Books on Demand, 2011).

InVS (L. Pascal, J.L. Lasalle), *Estimation de l'incidence du cancer de la thyroïde en Corse. 1998 – 2006* (Saint-Maurice: InVS, 2012)

InVS (Laurence Chérié-Challine et al.), *Surveillance sanitaire en France en lien avec l'accident de Tchernobyl – Bilan actualisé sur les cancers thyroïdiens et études épidémiologiques en cours en 2006* (Saint-Maurice: InVS, 2006).

IPSN / InVS (P. Verger, L. Chérié-Challine), *Évaluation des conséquences sanitaires de l'accident de Tchernobyl en France* (Saint-Maurice: InVS, 2001).

IPSN / InVS (P. Verger, L. Chérié-Challine), *Évaluation des conséquences sanitaires de l'accident de Tchernobyl en France – synthèse du rapport* (Saint-Maurice: InVS, 2001).

IPSN (Ph. Renaud, K. Beaugelin, H. Maubert, Ph. Ledenvic), *Conséquences radioécologiques et dosimétriques de l'accident de Tchernobyl en France* (Fontenay-aux-Roses: IPSN, 1997).

IPSN, *Tchernobyl, 10 ans après — dossier de presse* (Fontenay-aux-Roses: IPSN-Mission communication, 1996).

IRSN, *Baromètre IRSN 2006. La perception des situations à risques par les Français* (Fontenay-aux-Roses: IRSN, 2006).

Jacquemin-Raffestin, Jean-Michel, *Tchernobyl 20 ans après. Cachez ce nuage que je ne saurais voir* (Paris: Guy Trédaniel Éditeur, 2006).

Jacquemin-Raffestin, Jean-Michel, *Tchernobyl, conséquences en France. J'accuse...!* (Paris: Éditions Sang de la terre, 2002).

Jacquemin-Raffestin, Jean-Michel, *Tchernobyl: Aujourd'hui les Français malades* (Monaco: Éditions du Rocher, 2001).

Jacquemin, Jean-Michel, *Ce fameux nuage...Tchernobyl, la France contaminée* (Paris: Éditions Sang de la terre, 1999).

Jacquemin, Jean-Michel, *Ce fameux nuage...Tchernobyl, la France contaminée* (Paris: Éditions Sang de la terre, 1998).

Jamet, Dominique, "Le S.O.S de l'URSS," in *Quotidien de Paris*, 30 April 1986.

Jarošinskaja, Alla, "Lüge-86. Die geheimen Tschernobyl-Dokumente," in *Osteuropa*, 56, 4 (2006): 39-56.

Jasanoff, Sheila, *Designs on Nature. Science and Democracy in Europe and the United States* (Princeton NJ: Princeton University Press, 2005).

Jobin, Paul, "Qui est protégé par la radioprotection?," in *Ebisu* 47 (2012): 121-131.

Johnson, Angella, "Walker pledges review of Chernobyl claims," in *The Guardian*, 29 September 1987, p. 3.

Johnson, Thomas, *La bataille de Tchernobyl* (Paris: Play Film, 2006).

Johnstone, Helen, "Health director to study big rise in Benbecula cancer," in *The Times*, 1 April 1996.

Joly, Pierre-Benoit / Marris, Claire, "La participation contre la mobilisation? Une analyse comparée du débat sur les OGM en France et au Royaume-Uni," in *Revue internationale de politique comparée* 10, 2 (2003): 195-206.

Jopling, Micheal, "Sheep still too hot to handle," in *The Guardian*, 7 March 1987, p. 11.

Joppke, Christian**,** *Mobilizing against Nuclear Energy: a Comparison of Germany and the United States* (Berkeley, University of California Press, 1993).

Jordan, Katrin, *Tschernobyl und die Medien. Die Tschernobyl-Debatte in der bundesdeutschen und französischen Medienöffentlichkeit in der zweiten Hälfte der 1980er Jahre* (Humboldt Universität Berlin: PhD dissertation, forthcoming).

Josephson, Paul R., *Red Atom. Russia's Nuclear Power Program from Stalin to Today* (Pittsburgh: University of Pittsburgh Press, 2005).

Jowit, Juliette, “Dispatch: Chernobyl’s generations of suffering,” in *The Observer*, 23 April 2006.

Kalmbach, Karena, “Frankreich nach Tschernobyl: Eine Rezeptionsgeschichte zwischen ‚Nicht-Ereignis‘ und ‚Apokalypse‘.” In *“Anthropologischer Schock” nach Tschernobyl? Politik und Gesellschaft nach der Katastrophe*, ed. by M. Arndt (Wien / Köln / Weimar: Böhlau, 2014, forthcoming).

Kalmbach, Karena, “Von Strahlen und Grenzen: Tschernobyl als nationaler und transnationaler Erinnerungsort.” In *Ökologische Erinnerungsorte*, ed. by Frank Uekötter (Göttingen: Vandenhoeck & Ruprecht, 2014): 186-215.

Kalmbach, Karena, “Radiation and Borders: Chernobyl as a National and Transnational Site of Memory”, in *Global Environment*, 11 (2013): 130-59.

Kalmbach, Karena, “Die Wolke, die an der Grenze haltmachte. Zur Wahrnehmung der Auswirkungen von Tschernobyl in Frankreich.” In *Tschernobyl und die europäische Solidaritätsbewegung*, ed. by IBB (Norderstedt: Books on Demand, 2011): 74-88.

Kalmbach, Karena, *Tschernobyl und Frankreich. Die Debatte um die Auswirkungen des Reaktorunfalls im Kontext der französischen Atompolitik und Elitenkultur* (Frankfurt a. M., 2011).

Kane, Paul, *Chernobyl: evaluation and radiological assessment of factors affecting drinking water supplies* (Her Majesty’s Inspectorate of Pollution, 1989).

Kasperski, Tatiana, *La politique de la mémoire d’une catastrophe nucléaire: les usages de l’accident de Tchernobyl en Biélorussie (1986–2008)* (Sciences Po Paris: PhD dissertation, 2012).

Katz, Alison, “Les dossiers enterrés de Tchernobyl,” in *Le Monde diplomatique,* March 2008, available online: http://mondediplo.com/2008/04/14who.

Keel, Paul / Walker, Martin, “British evacuees fly home to health checks,” in *The Guardian*, 1 May 1986, p. 1.

Kelly G. N. / Shershakov, V. M. (eds.), *Environmental contamination, radiation doses and health consequences after the Chernobyl accident* (Ashford: Nuclear Technology Publishing, 1996).

Kessler, Marie Christine, *Les grands corps de l’État* (Paris: Presses de la fondation nationale des sciences politiques, 1986).

Kirchhof, Mignon / Meyer, Jan-Henrik (eds.), “Global Protest against Nuclear Power. Transfer and Transnational Exchange in the 1970s and 1980s,” in *Historical Social Research* 39, 1 (2014): 165-190.

Kostin, Igor, *Chernobil: Confesiones de un reportero* (El Papiol: Efados, 2006).

Kostin, Igor, *Chernobyl: confessions of a reporter* (New York: Umbrage Editions, 2006).

Kostin, Igor, *Chernobyl: Confissioni di un reporter* (Torino: Edizioni Gruppo Abele, 2006).

Kostin, Igor, *Tchernobyl: confessions d'un reporter* (Paris: Editions des Arènes, 2006).

Kostin, Igor, *Tschernobyl. Nahaufnahme* (Munich: Kunstmann, 2006).

Kostine, Igor (avec la collaboration de Thomas Johnson), *Tchernobyl: confessions d'un reporter* (Paris: Éditions des Arènes, 2006).

Kriesi, Hanspeter / Koopmans, Ruud / Duyvendak, Jan Willem / Giugni, Marco G., *New Social Movements in Western Europe. A Comparative Analysis* (chapter 6: The Political Construction of Nuclear Energy Issues) (Minneapolis: University of Minnesota Press, 1995).

Kuchinskaya, Olga, “Twice Invisible: Formal Representations of Radiation Danger,” in *Social Studies of Science* 43, 1 (2012): 78-96.

Kuhn, Thomas, *The Structure of Scientific Revolutions* (Chicago, IL: University of Chicago Press, 1962).

Lashmer, Paul / McKie, Robin / Lean, Geoffrey, "Confusion in Britain," in *The Guardian*, 11 May 1986, p. 11.

Laucht, Christoph, *Elemental Germans: Klaus Fuchs, Rudolf Peierls and the Making of British Nuclear Culture 1939-59* (Basingstoke: Palgrave Macmillan, 2012).

Lauvergeon, Anne / Jamard, Michel-Hubert, *La troisième révolution énergétique* (Paris: Plon, 2008).

Le Figaro, "Tchernobyl: mort du Professeur Pierre Pellerin": http://www.lefigaro.fr/actualite-france/2013/03/03/01016-20130303ARTFIG00110-tchernobyl-mort-du-professeur-pierre-pellerin.php?.

Le Monde, "La catastrophe de Tchernobyl pourrait être à l'origine de 24 000 décès par cancers," 28 August 1986, p. 20.

Le Parisien, "Le nucléaire en France: la sécurité avant tout," 30 April 1986.

Lean, Geoffrey, "Nuclear family hunted by a testing legacy," in *The Observer*, 29 June 1986, p. 5.

Lean, Geoffrey / Heath, Tony / Siddell, David, "Fell lambs born under N-cloud," in *The Observer*, 3 May 1987, p. 5.

Lemarchand, Frédérick et al. (eds.), *Destination Tchernobyl* (Paris: Éditions Syllepse, 2006; Écologie & Politique 32/2006).

Les Annales des Mines: "Pierre Lucien Jean Guillaumat (1909-1991)": http://www.annales.org/archives/x/guillaumat.html.

Les Dernières Nouvelles d'Alsace, "Polémique sur l'information nucléaire en France," 12 May, 1986.

Lethonen, Markku / Le Renard, Claire / Jobert, Arthur, *The diverging trajectories of Fast Breeder Reactor development in France and the UK (1950s-1990s): a tentative comparison*, paper presented at the 6th Tensions of Europe plenary conference "Democracy and Technology: Europe in Tension from the 19th to the 21st century" Paris, 19-21 September 2013.

Lethonen, Markku, "Reactions To Fukushima in Finland, France and the UK – Rupture or Continuity in the Nuclear Techno-Politics?," in *Second 3.11 Virtual Conference (2013)*: http://fukushimaforum.wordpress.com/online-forum-2/second-3-11-virtual-conference-2013/reactions-to-fukushima-in-finland-france-and-the-uk-rupture-or-continuity-in- the-nuclear-techno-politics/.

Lhomme, Stéphane, *L'insécurité nucléaire : bientôt un Tchernobyl en France ?* (Barret-sur-Méouge: Y. Michel, 2006).

Libération, "Message aux malades de la thyroïde...," 19 November 2005, p. 10.

Libération, "Nogent, 7 décembre 1990, 20h 11: Catastrophe-fiction," 22 May 1986.

Libération, "L'Europe dans le nuage," 3 and 4 May 1986.

Liberatore, Angela, *The Mangement of Uncertainty. Learning from Chernobyl* (Amsterdam: Gordon and Breach Publishers, 1999).

Lindee, Susan M., *Suffering Made Real: American Science and the Survivors at Hiroshima* (Chicago IL: University of Chicago Press, 1994).

Lord Marshall, *The Chernobyl Accident* (London: CEGB, December 1986).

Low Level Radiation Campaign, *Do we really want nine Chernobyl accidents every year for the next ten years? : European Council Directive 96/29/Euratom the so-called „basic standards directive" on radiation protection* (Low Level Radiation Campaign, 1999).

Lubricht, Rüdiger, *Verlorene Orte / Gebrochene Biografien. Fotografien zu Tschernobyl* (Dortmund: IBB, 2011).

Luhmann, Niklas, *Risk: A Sociological Theory* (Berlin / New York: de Gruyter, 1993).

MacDonald, Calcun, "Isle of desolate beauty haunted by the spectre of Chernobyl Benbecula fears grow as cancer numbers rise years after the rain with the orange-red dust," in *The Herald Scotland*, 1 April 1996.

MacDonald, Eileen, “High radiation levels scar rural families,” in *The Observer*, 23 August 1987, p. 6.

Mackay, Louis / Thompson, Mark (eds.), *Something in the wind: politics after Chernobyl* (London: Pluto, 1988).

Marples, David, *Belarus: from Soviet rule to nuclear catastrophe* (Basingstoke: Macmillan, 1996).

Marples, David R., *The social impact of the Chernobyl disaster* (Basingstoke: Macmillan, 1988).

Marples, David, *Chernobyl and nuclear power in the USSR* (Basingstoke: Macmillan in association with Canadian Institute of Ukrainian Studies, University of Alberta, 1987).

Masco, Joseph P., *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton University Press, 2006).

McKie, Robin, “Britain's deadly Chernobyl legacy,” in *The Observer*, 21 April 1991, p. 11.

McRae, Hamish, “The Soviet nuclear disaster seems likely to put King Coal back on the throne,” in *The Guardian*, 30 April 1986, p. 24.

Medvedev, Grigori, *No breathing room: the aftermath of Chernobyl* (New York: Basic Books, 1993).

Medvedev, Grigori, *The truth about Chernobyl* (London: Tauris, 1991).

Medvedev, Grigorij, *La Vérité sur Tchernobyl*, (Paris: A. Michel, 1990).

Medvedev, Zhores A., *The legacy of Chernobyl* (Oxford: Basil Blackwell, 1990).

Medvedev, Jaurès, *Désastre nucléaire en Oural* (trad. de l'anglais par Anne-Rose Fontanet, Roger et Bella Belbéoch) (Cherbourg: Isoète, 1988).

Medvedev, Zhores A., *Nuclear disaster in the Urals* (New York: Norton, 1979).

Meikle, James, “Sheep farms under curbs see no end to Chernobyl fallout,” in *The Guardian*, 13 April 2006.

Meikle, James, “Chernobyl legacy lingers down on the farm,” in *The Guardian*, 1 May 1999, p. 10.

Mellor, Felicity, “Left Unsaid: The Marginalisation of Scientist-Critics in Media Coverage of Controversial Technologies.” In *Sciences and its Publics*, ed. by A.R. Bell, S. R. Davies, F. Mellor (Newcastle: Cambridge Scholars Publications, 2008): 157-178.

Meyer, Jan-Henrik, “Challenging the Atomic Community: The European Environmental Bureau and the Europeanization of Anti-Nuclear Protest.” In *Societal Actors in European Integration. Polity-Building and Policy-Making 1958–1992*, ed. by W. Kaiser and J.-H. Meyer (Basingstoke: Palgrave, 2013): 197–220.

Meyer, Jan-Henrik, “Un faux départ? Les acteurs français dans la politique environnementale européenne des années 1970.” In *Une protection de l'environnement à la française, XIXe-XXe siècles*, ed. by J.-F. Mouhot and C.-F. Mathis (Seyssel: éditions Champ Vallon, 2013): 120–30.

Mez Lutz / Gerhold, Lars / de Haan, Gerhard, *Atomkraft als Risiko. Analysen und Konsequenzen nach Tschernobyl* (Frankfurt am Main: Peter Lang Verlag, 2010).

Micoulaut, Raymond, *Tchernobyl. L’histoire d’une désinformation* (Paris: L’Harmattan, 2006).

Ministère de l’Économie, des Finances et de l’Industrie, *Une pièce essentielle dans l’organisation de la sûreté nucléaire et de la radioprotection: le nouvel IRSN*. Extrait du rapport annuel 2001 de la DGEMP, Paris 2002.

Ministry of Agriculture, Fisheries and Food, *Radionuclide levels in food, animals and agricultural products 1987: post Chernobyl monitoring in England and Wales* (London: HMSO, 1988).

Mittica, Pierpaolo, *Chernobyl: the hidden legacy; with additional text by Naomi Rosenblum, Rosalie Bertell, Wladimir Tchertkoff* (London: Trolley, 2007).

Mittica, Pierpaolo, *Chernobyl La Herencia Oculta* (Pontevedra: Ellago Ediciones, 2006).

Mizzi, Victor, "Über die Arbeit von Chernobyl Children's Life Line." In *Tschernobyl und die europäische Solidaritätsbewegung*, ed. by IBB (Norderstedt: Books on Demand, 2011): 105-107.

Monbiot, George, "Christopher Busby's wild claims hurt green movement and Green party," in *The Guardian Online*, 22 November 2011: http://www.guardian.co.uk/environment/georgemonbiot/2011/nov/22/christopher-busby-nuclear-green-party.

Monbiot, George, "How the Greens were misled," 22 November 2011: http://www.monbiot.com/2011/11/22/how-the-greens-were-misled/.

Monbiot, George, "Evidence Meltdown," 4 April 2011: http://www.monbiot.com/2011/04/04/evidence-meltdown/.

Monbiot, George / Tindale, Stephen / Pearce, Fred / Hanlon, Michael / Lynas, Mark, "A letter to David Cameron," 15 March 2012: http://www.monbiot.com/2012/03/15/a-letter-to-david-cameron/.

Montellier, Chantal, *Tchernobyl mon amour* (Arles: Actes Sud BD, 2006).

Morel, Michel, "L'état français a déjà fait le choix du tout-nucléaire," in *Rouge*, 15 May 1986.

Mould, Richard Francis, *Chernobyl record: the definitive history of the Chernobyl catastrophe* (Bristol: Institute of Physics Publishing, 2000).

Mould, Richard F., *Chernobyl: the real story* (Oxford: Pergamon Press, 1988).

Mühlenhöver, Emmanuelle, *L'environnement en politique étrangère. Raisons et illusions : une analyse de l'argument environnemental dans les diplomaties électronucléaires française et américaine* (Paris: L'Harmattan, 2002).

Murtagh, Peter, "Soviet reactor 'saver than British AGR'," in *The Guardian*, 8 May 1986, p. 2.

Naughtie, James / Rose, David, "MPs told: there is no health risk," in *The Guardian*, 7 May 1986, p. 1.

Nehring, Holger, "Cold War, Apocalypse, and Peaceful Atoms. Interpretations of Nuclear Energy in British and West German Anti-Nuclear Weapons Movements," in *Historical Social Research* 29, 3 (2004): 150-170.

Nelkin, Dorothy / Pollak, Michael, *The Atom Besieged: Antinuclear Movements in France and Germany* (Cambridge, MA: MIT Press, 1982).

Nesterenko, Vasilij, "Mauern der Ignoranz. Protokoll einer Katastrophe," in *Osteuropa*, 56, 4 (2006): 27-38.

Nesterenko, Vassilli, "L'Europe aurait pu devenir inhabitable." In *Les silences de Tchernobyl,* ed. by G. Grandazzi and F. Lemarchand (Paris: Éditions Autrement, 2004): 14-27.

New York Academy of Science, "Chernobyl: Consequences of the Catastrophe for People and the Environment": http://www.nyas.org/publications/annals/Detail.aspx?cid=f3f3bd16-51ba-4d7b-a086-753f44b3bfc1.

Nisbet, A.S. / Woodman, R.F.M., *Options for the management of Chernobyl-restricted Areas in England and Wales* (NRPB, 1998).

Nisbet, Anne, "Management of Chernobyl-restricted areas in England and Wales," in *Radiological Protection Bulletin* 211, (April 1999): 11–15.

NRPB, "Response to Wind Blown Particles and Cancer Mortality": http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947375682.

NRPB, *A Preliminary Assessment of the Radiological Impact of the Chernobyl Reactor Accident on the Population of the European Community* (Luxembourg: Commission of the European Communities, 1987)

Nuti, Leopoldo, *La sfida nucleare. La politica estera italiana e le armi atomiche, 1945-1991* (Bologna: Il Mulino, 2007).

O'Connell, Vince, "Letter to the editor," in *The Guardian*, 3 May 1986, p. 12.

O'Meara, Liam, *Fallout: the children of Belarus and the people of Ireland after Chernobyl* (Dublin: Columba Press, 2003).

O'Riordan, Mike, *Radiation protection: a memoir of the National Radiological Protection Board* (Didcot: Health Protection Agency, 2007).

Page, Campbell, "'Information withheld' on radioactivity in France," in *The Guardian*, 12 May 1986.

Page, Jeremy, "Chernobyl hero remembers the men who saved Europe – Factbox," in *The Times*, 22 April 2006.

Park, Chris C., *Chernobyl. The long shadow* (London: Routledge, 1989).

Parker, Victoria, *Chernobyl 1986: an explosion at a nuclear power station* (Oxford: Raintree, 2006).

Pausewang, Gudrun, *Die Wolke* (Gütersloh / Rheda-Wiedenbrück, 2003).

Perrow, Charles, *Normal Accidents. Living with High-Risk Technologies* (Princeton NJ: Princeton University Press, 1984).

Petrucci, Mario, *Half life: poems for Chernobyl* (Coventry: The Heaventree Press, 2004).

Petrucci, Mario, *Heavy water: a poem for Chernobyl* (London: Enitharmon, 2004).

Petryna, Adriana, *Life Exposed: Biological Citizens after Chernobyl* (Princeton: Princeton University Press, 2002).

Phillips, Sarah Drue, "Chernobyl's Sixth Sense: The Symbolism of an Ever-Present Awareness," in *Anthropology and Humanism*, 29, 2 (2004): 159–85.

Polidori, Robert, *Zones of Exclusion: Pripyat and Chernobyl* (Göttingen: Steidl, 2004).

Public Health England, "The Chernobyl Accident": http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/RadiationIncidents/Chernobyl/.

Quotidien de Paris, "Catastrophe nucléaire en URSS," 29 April 1986.

Radkau, Joachim, "Der 'Größte Anzunehmende Unfall.'" In *Ökologische Erinnerungsorte*, ed. by Frank Uekötter (Göttingen: Vandenhoeck & Ruprecht, 2014): 50-60.

Radkau, Joachim, *Aufstieg und Krise der deutschen Atomwirtschaft 1945-1975. Verdrängte Alternativen und der Ursprung der nuklearen Kontroverse* (Reinbek: Rowohlt 1983).

Read, Piers Paul, *Ablaze: the story of Chernobyl* (London: Mandarin, 1995).

Reddig-Korn, Brigitta (ed), *Materialien zur Unterrichtspraxis – Gudrun Pausewang, Die Wolke* (Ravensburg: Ravensburger Buchverlag, 2009).

Renaud, Philippe / Champion, Didier / Brenot, Jean, *Les retombées radioactives de l'accident de Tchernobyl sur le territoire français. Conséquences environnementales et expositions des personnes* (Paris: Éditions Tec & Doc, 2007).

Renaud, Philippe et al., *Les retombées en France de l'accident de Tchernobyl: conséquences radioécologiques et dosimétriques* (Les Ulis: EDP sciences, 1999).

Renn, Ortwin, "Public Responses to the Chernobyl Accident," in *Journal of Environmental Psychology*, 10 (1990): 151-167.

Richard, Pascale, "Tchernobyl: Quelles rétombées en France?," in *Quotidien de Paris*, 23 and 24 August 1986.

Rickard, Graham, *The Chernobyl catastrophe* (Hove: Wayland, 1988).

Rivasi, Michèle / Crié, Hélène, *Ce nucléaire qu'on nous cache* (Paris: Albin Michel, 1998).

Rivat, Emmanuel, *La transnationalisation de la cause antinucléaire en Europe. Une approche comparée de la France et des Pays-Bas, 1970-2010* (Sciences Po Bordeaux: PhD dissertation, 2013).

Roche, Adi, *Children of Chernobyl: the human cost of the world's worst nuclear disaster* (London: Fount, 1996).

Rodriguez, Havidan / Quarantelli, Enrico L. / Dynes, Russell (eds.), *Handbook of Disaster Research* (New York: Springer, 2006).

Rootes, Christopher, "Britain." In *Environmental Protest in Western Europe*, ed. by Christopher Rootes (Oxford: Oxford University Press, 2003): 20-58.

Rootes, Christopher, "Environmental Protests, Local Campaigns and the Environmental Movement in England", available online: http://www.kent.ac.uk/sspssr/staff/academic/rootes/ecpr-lisbon.pdf.

Roussel, Violaine, "Scandales et redéfinitions de la responsabilité politique. La dynamique des affaires de santé et de sécurité publiques," in *Revue française de science politique* 58, 6 (2008): 953-983.

Rucht, Dieter, "The Impact of Anti-Nuclear Power Movements in International Comparison." In *Resistance to New Technology. Nuclear Power, Information Technology, and Biotechnology*, ed. by Martin Bauer (Cambridge: Cambridge University Press, 1995): 277-289.

Rüdig, Wolfgang, *Mobilising Environmental Expertise: 'Alternative' Research Institutes in Germany* (University of Strathclyde Working Paper, 2000).

Rüdig, Wolfgang, *Anti-nuclear Movements: A World Survey of Opposition to Nuclear Energy* (Harlow: Longman, 1990).

Ryder, E.A., "Regulation of nuclear power in the UK after Chernobyl", in *Nuclear risks: reassessing the principles and practice after Chernobyl. Conference: Papers and discussions* (London: IBC, 1987).

Sahm, Astrid, "Die Katastrophe von Tschernobyl im Kontext einer europäischen Erinnerungskultur." In *Tschernobyl und die europäische Solidaritätsbewegung,* ed. by IBB (Norderstedt: Books on Demand, 2011): 16–32.

Sahm, Astrid, "Auf dem Weg in eine transnationale Gesellschaft? Belarus und die internationale Tschernobyl-Hilfe," in *Osteuropa*, 56, 4 (2006): 105-116.

Sahm, Astrid, *Transformation im Schatten von Tschernobyl. Umwelt- und Energiepolitik im gesellschaftlichen Wandel von Belarus und Ukraine* (Münster: LIT Verlag, 1999).

Sahm, Astrid, "Und der dritte Weltkrieg heißt Tschernobyl..." In *Erinnerungen gegen den Krieg*, ed. by F. Dorn et al. (Minsk: Journalistenfonds des Journalistenverbandes von Belarus, 1995): 202-227.

Sahm, Astrid / Sapper, Manfred / Weichsel, Volker (eds), "Tschernobyl: Vermächtnis und Verpflichtung," special issue of *Osteuropa*, 56, 4 (2006).

Sandalls, F. J., *Hot particles from Chernobyl: a review* (Great Britain, Ministry of Agriculture, Fisheries and Food, 1991).

Sarasin, Philipp, "Was ist Wissensgeschichte," in *Internationales Archiv für Sozialgeschichte der deutschen Literatur* 36, 1 (2011): 159-172.

Schmid, Sonja, "When Safe Enough is not Good Enough," in *Bulletin of the Atomic Scientist* 67, 2 (2011): 19-29.

SCPRI, *Organisation pratique de la radioprotection en France dans le cas de la santé publique et du travail*. Rapport SCPRI no 75 (août 1962).

Simon, Gilles, *Plogoff. L'apprentissage de la mobilisation sociale* (Rennes: Presses Universitaires de Rennes, 2010).

Simonnot, Philippe, *Les nucléocrates* (Grenoble: Presses universitaires de Grenoble, 1978).

Simons, Paul, "Ill winds carried Chernobyl poison," in *The Times*, 26 April 2006.

Slovic, Paul, "Perception of Risk," in *Science* 236 (1987): 280-285.

Smith, F. B / Clark, M. J, *The transport and deposition of airborne debris from the Chernobyl nuclear power plant accident with special emphasis on the consequences to the United Kingdom.* (Bracknell: Meteorological Office, 1989).

Snape, Tony, "Chernobyl pay-out reaches £ 1.7 m," in *The Observer*, 17 September 1989, p. B5.

Stead, Jean, "Scottish fallout four times critical levels," in *The Guardian*, 9 May 1986, p. 2.

Stead, Jean, "Radioactivity alarms Scotch makers," in *The Guardian*, 7 May 1986, p. 2.

Stone, Philip R., "Dark Tourism, Heterotopias and Post-Apocalyptic Places: The Case of Chernobyl." In *Dark Tourism and Place Identity*, ed. by L. White and E. Frew (Melbourne: Routledge, 2013).

Strazzulla, Jérome / Zerbib, Jean-Claude, *Tchernobyl – Les médias et l'événement* (Paris: La Documentation française, 1991).

Streiff, Gérard, "Le syndrome de Tchernobyl," in *l'Humanité*, 30 April 1986.

Sussex Energy Group, "Response to Government's 'The Future of Nuclear Power' consultation" (Sussex, 2007): https://www.sussex.ac.uk/webteam/gateway/file.php?name=seg-spru-nuclear-response.pdf&site=264.

Symaniec, Virginie, "Mettre en scène La Supplication: du déni de la réalité au rejet de la représentation." In *Les silences de Tchernobyl,* ed. by G. Grandazzi and F. Lemarchand (Paris: Éditions Autrement, 2004): 157-191.

Tardieu, Vincent, "L'état de l'hexagone après le nuage," in *Libération*, 9 May 1986.

Tardieu, Vincent, "La France miraculée," in *Libération*, 7 May 1986.

Tardieu, Vincent, "Catastrophe dans une centrale nucléaire soviétique," in *Libération*, 29 April 1986.

Taylor, Richard Norton, "Chernobyl cloud jams Whitehall phones," in *The Guardian*, 8 May 1986, p. 2.

Tchertkoff, Wladimir, *Le crime de Tchernobyl. Le goulag nucléaire* (Arles: Actes Sud, 2006).

Telegraph online, "Only two in five believe climate change caused by human activity," 14 November 2009: http://www.telegraph.co.uk/earth/earthnews/6565955/Only-two-in-five-believe-climate-change-caused-by-human-activity.html.

Teräväinen, Tuula / Lehtonen, Markku / Martiskainen, Mari, "Climate change, energy security, and risk – debating nuclear new build in Finland, France and the UK,"in *Energy Policy* 39 (2011): 3434-3442.

Testard-Vaillant, Philippe, "Yves Lenoir, en vert et contre tous," in *La Recherche. L'actualité des Sciences* 356 (2002): 19, available online: http://www.larecherche.fr/actualite/aussi/yves-lenoir-vert-contre-tous-01-09-2002-86243.

TF1, Interview with Pierre Pellerin, in *13 h*, 10 May 1986.

TF1, Interview with Pierre Pellerin, in *13 h*, 29 April 1986.

The Chernobyl Forum, *Chernobyl's Legacy: Health, Environmental and Socio-Economic Impacts and Recommendations to the Governments of Belarus, the Russian Federation and Ukraine* (Wien: IAEA 2006).

The Daily Record, "Nuke link to cancer ruled out," 23 April 1996.

The Daily Record, "Fags to blame for isle cancer scare - Health chief's claim," 2 April 1996.

The Greens, "Windscale 1957...," in *The Guardian*, 8 May 1986, p. 4.

The Guardian, “Chernobyl nuclear disaster – in pictures”: http://www.theguardian.com/environment/gallery/2011/apr/26/chernobyl-nuclear-disaster-in-pictures.

The Guardian, “Disaster that fell with the rain on a bleak hill,” 27 April 1990, p. 25.

The Guardian, “Chernobyl bans criticised,” 19 September 1989, p. 2.

The Guardian, “Baker acts to soothe radioactivity fears,” 7 May 1986, p. 6.

The Guardian, “A disaster without frontiers,” in *The Guardian*, 30 April 1986, p. 10.

The Guardian, “PM rejects Sizewell rethink call,” in *The Guardian*, 30 April 1986, p. 5.

The Independent, “Experts to investigate island cancer deaths - Scottish health scare: Doctors on Benbecula fear high incidence may be linked to food contaminated in fall-out from Chernobyl,” 1 April 1996.

The International Chernobyl Project, *An Overview. Assessment of Radiological Consequences and Evaluation of Protective Measures. Report by an International Advisory Committee* (Wien: IAEA, 1991).

The National Diet of Japan, *The official Report of the Fukushima Nuclear Accident Independent Investigation Commission. Executive Summary* (2012), available online: http://www.nirs.org/fukushima/naiic_report.pdf.

The New York Times, “Chernobyl trials begin,” 8 July 1987.

The Scotsman, “MSPs vote No to nuclear stations,” 17 January 2008: http://www.scotsman.com/news/politics/top-stories/msps-vote-no-to-new-nuclear-stations-1-1074436.

The Sun, “A Life Line to radiation kids,” 25 April 2006.

Thorpe, Dave, *Doc Chaos: the Chernobyl effect* (Hooligan Press, 1988).

Tinning, William, “Chernobyl fall-out denial over Benbecula cancers,” in *The Herald Scotland*, 4 April 1996.

Tompkins, Andrew, *“Better Active Today than Radioactive Tomorrow!” Transnational Opposition to Nuclear Energy in France and West Germany, 1968-1981* (Oxford: PhD dissertation, 2012).

Topçu, Sezin, *La France nucléaire. L'art de gouverner une technologie contestée* (Paris: Seuil, 2013).

Topçu, Sezin, *L’agir contestataire à l’épreuve de l’atome. Critique et gouvernement de la critique dans l’histoire de l’énergie nucléaire en France, 1968-2008* (École des Hautes Études en Sciences Sociales: PhD dissertation, 2010).

Topçu, Sezin, “Confronting Nuclear Risks: Counter-Expertise as Politics Within the French Nuclear Energy Debate,” in *Nature and Culture* 3, 2 (2008): 225-245.

Topçu, Sezin, “Les physiciens dans le mouvement anti-nucléaire: entre science, expertise et politique,” in *Cahiers d'histoire. Revue d'histoire critique* 102, 2 (2007): 89-108.

Touraine, Alain et al., *La prophétie antinucléaire* (Paris: Seuil, 1980).

Touraine, Alain, “Réactions anti-nucléaires ou mouvement anti-nucléaire,” in *Sociologie et Société*, 13, 1 (1981): 117-145.

Travis, Alain, “No radiation threat to the UK, Commons told,” in *The Guardian*, 30 April 1986, p. 4.

Tucker, Anthony, “Levels dropping fast as cloud moves away,” in *The Guardian*, 7 May 1986, p. 2.

Tucker, Anthony, “Europe fears effects of high radiation,” in *The Guardian*, 6 May 1986, p. 1.

Tucker, Anthony, “Unquenchable core of fear inside the poisoned furnace,” in *The Guardian*, 30 April 1986, p. 23.

Turner, Royce Logan, “Let the campaign roll again,” in *The Guardian*, 12 May 1986, p. 9.

Uekötter, Frank, “Environment and Memory: Some Introductory Remarks,” in *Global Environment* 11 (2013): 5-15.

Uekötter, Frank, “Wege zu einer ökologischen Erinnerungskultur.” In *Ökologische Erinnerungsorte*, ed. by Frank Uekötter (Göttingen: Vandenhoeck & Ruprecht, 2014): 7-26.

UNDP and UNICEF, *The human consequences of the Chernobyl Nuclear Accident – A Strategy for Recovery* (New York: United Nations, 2002).

UNSCEAR, *Sources and Effects on Ionizing Radiation, UNSCEAR 2000 Report to the General Assembly with Scientific Annexes. Annex J: Exposures and effects of the Chernobyl accident* (New York: United Nations, 2000).

Uranium Institute, *Understanding Chernobyl* (London: Uranium Institute, 1986).

van der Pligt, Joop, *Nuclear energy and the public* (Oxford: Blackwell, 1992).

van Lente, Dick (ed.), *The Nuclear Age in Popular Media. A Transnational History, 1945-1965* (Basingstoke: Palgrave Macmillan, 2012).

Vletch, Andrew, “Parents scour chemists shops for iodine tablets,” in *The Guardian*, 2 May 1986, p. 6.

Vodnik, Pierre, “Le syndrome du nuage panique les Polonais,” in *Libération*, 2 May 1986.

Vulliamy, Edward / Heath, Tony, “Chernobyl controls on sheep extended,” in *The Guardian*, 13 August 1987, p. 1.

Wainwright, Martin, “Ministers deny risk as fallout from Chernobyl lingers in sheep,” in *The Guardian*, 30 December 1994, p. 9.

Wales on Sunday, “Remembering Chernobyl,” 23 April 2006.

Walker, Linda, “Die Arbeit von 'Chernobyl Children's Project (UK)' und ein Überblick über weitere Tschernobyl-Organisationen und Netzwerke in Großbritannien.” In *Tschernobyl und die europäische Solidaritätsbewegung*, ed. by IBB, (Norderstedt: Books on Demand, 2011): 108-116.

Walker, Linda, *Living with Chernobyl: Ira's story* (Tunbridge Wells: Ticktock Media, 2005).

Walker, Martin / Valliamy, Edward, “Airport radiation tests for students,” in *The Guardian*, 2 May 1986, p. 1.

Walker, Martin, “Silence covers 'zone of death',” in *The Guardian*, 30 April 1986, p. 1.

Walker, Martin, “The vision consumed in the fire this time,” in *The Guardian*, 30 April 1986, p. 23.

Walker, Samuel, *Three Mile Island. A Nuclear Crisis in Historical Perspective* (Berkeley: University of California Press, 2004).

Ward, David, “Hill farmers living under cloud as effects of Chernobyl linger,” in *The Guardian*, 25 April 1994, p. 7.

Warren, Jane, *Igor: the courage of Chernobyl's child* (London: Boxtree, 1997).

Watson, Jim / Scott, Alister, “New Nuclear Power in the UK: A Strategy for Energy Security?,” available online: http://www.sussex.ac.uk/Users/prpp4/Supergen_Nuclear_and_Security.pdf.

Watt Committee on Energy, *Five years after Chernobyl. 1986-1991: a review* (London: Watt Committee on Energy, 1991).

Wavell, Stuart / Cook, Stephen, “Case of missing isotope,” in *The Guardian*, 7 May 1986, p. 32.

Weart, Spencer R., *Nuclear Fear. A History of Images* (Cambridge, MA: Harvard University Press, 1988).

Wellock, Tom, *Critical Masses: Opposition to Nuclear Power in California, 1958-78* (Madison: University of Wisconsin Press, 1998).

Welsh, Ian, *Mobilising Modernity. The nuclear moment* (London: Routledge, 2000).

Welsh, Ian, “The NIMBY Syndrome: Its Significance in the History of the Nuclear Debate in Britain,” in *British Journal for the History of Science* 26, 1 (1993): 15-32.

Wendland, Anna Veronika, “Rezension zu: Kalmbach, Karena: Tschernobyl und Frankreich. Die Debatte um die Auswirkungen des Reaktorunfalls im Kontext der französischen Atompolitik und Elitenkultur. Frankfurt am Main 2011,” in *H-Soz-u-Kult*, 20.08.2012: http://hsozkult.geschichte.hu-berlin.de/rezensionen/2012-3-086.

Werth, Nicolas, “Tchernobyl: enquête sur une catastrophe annoncée,” in *L’Histoire*, 308 (4:2006), p. 66-75.

Western Daily Press, “Nature’s cure for nuclear fallout: Wildlife heaven,” 21 April 2006.

White, Michael / Walker, Martin / Brummer, Alex, “US estimates up to 3,000 victims from satellite information,” in *The Guardian*, 1 May 1986, p. 1.

WHO Information Office, *Statement WHO/06: 'Interpretation of the World Health Organization's agreement with the International Atomic Energy Agency*, 23 February 2001: http://www.who.int/inf-pr-2001/en/state2001-05.html.

WHO, *Health Effects of the Chernobyl Accident and Special Health Care Programmes, Report of the UN Chernobyl Forum Expert Group “Health”* (Geneva: WHO, 2006).

Wikipedia, “Ali Hewson”: http://en.wikipedia.org/w/index.php?title=Ali_Hewson&oldid=480318803.

Wikipedia, “Acuerdo WHA12-40 entre la OIEA y la OMS de 1959”: http://es.wikipedia.org/wiki/Acuerdo_WHA12-40_entre_la_OIEA_y_la_OMS_de_1959.

Wikipedia, “Independent WHO”: http://fr.wikipedia.org/wiki/Independent_WHO.

Wikipedia: “S.T.A.L.K.E.R.”: http://en.wikipedia.org/wiki/S.T.A.L.K.E.R.:_Shadow_of_Chernobyl.

Wikipedia, “Talk: Christopher Busby”: http://en.wikipedia.org/wiki/Talk:Christopher_Busby#cite_note-0.

Women in Europe for a Common Future, “Re: WHO/IAEA Agreement of 1959”: www.wecf.eu/download/2010/04/letterIAEA-WHO.pdf.

World Nuclear Association, “Chernobyl Accident 1986”: http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Chernobyl-Accident/.

World Nuclear Association, *Fukushima and Chernobyl: Myth versus Reality* (London: WNA, 2012), available online: http://www.youtube.com/watch?v=2Ncm8KwxWNg).

Worley, Norman / Lewins, Jeffery (eds.), *The Chernobyl accident and its implications for the United Kingdom* (London / New York: Elsevier Applied Science Publishers, 1988).

Wynne, Brian, *Rationality and Ritual. Participation and Exclusion in Nuclear Decision-making* (Abingdon: Earthscan, 2011).

Wynne, Brian, “Misunderstood Misunderstandings: Social Identities and Public Uptake of Science.” In *Misunderstanding Science? The Public Reconstruction of Science and Technology*, ed. by A. Irwin and B. Wynne (Cambridge: Cambridge University Press, 1996): 19-46.

Wynne, Brian, “Misunderstood Misunderstanding: Social Identities and Public Uptake of Science,” in *Public Understanding of Science* 1 (1992): 281-304.

Wynne, Brian, “Sheepfarming after Chernobyl. A Case Study in Communicating Scientific Information,” in *Environment* 31, 2 (1989): 10-39.

Yablokov, Alexey / Nesterenko, Vassily B. / Nesterenko, Alexey V., *Chernobyl: consequences of the catastrophe for people and the environment* (Boston: Blackwell Publisher on behalf of the New York Academy of Sciences, 2009).

Yablokov, Alexey / Labunska, Iryna / Blokov, Ivan (eds.), *The Chernobyl Catastrophe - Consequences on Human Health* (Amsterdam: Greenpeace, 2006), available online: http://www.greenpeace.org/international/en/publications/reports/chernobylhealthreport/.

Yaroshinskaya, Alla, *Chernobyl: the forbidden truth* (Oxford: Jon Carpenter, 1994).

Yarochinskaya, Alla, *Tchernobyl, vérité interdite* (La Tour-d'Aigues: Éditions de l'Aube, 1993).

Young, Hugo, "Crisis of credibility exposed by Chernobyl," in *The Guardian*, 8 May 1986, p. 21.

Zink, Andrea, "Approaching the Void. Chernobyl in Text and Image," in *Anthropology of East Europe Review* 30, 1 (2012): 100-112.